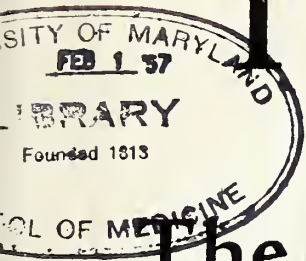


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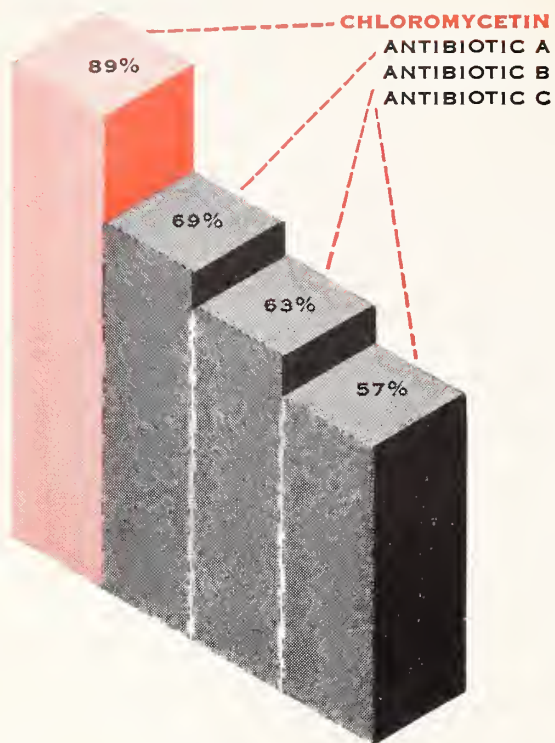
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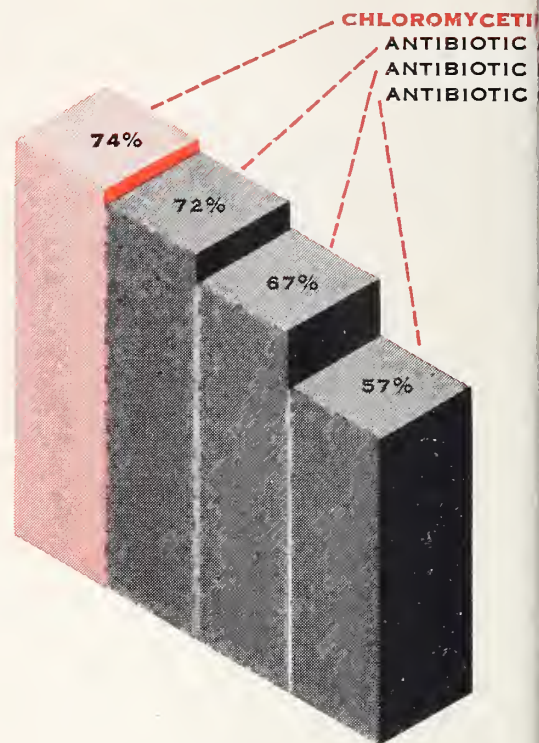
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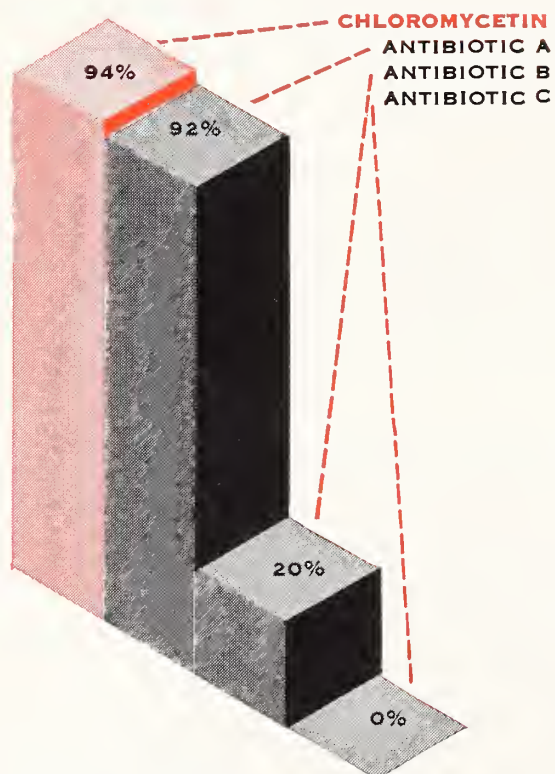




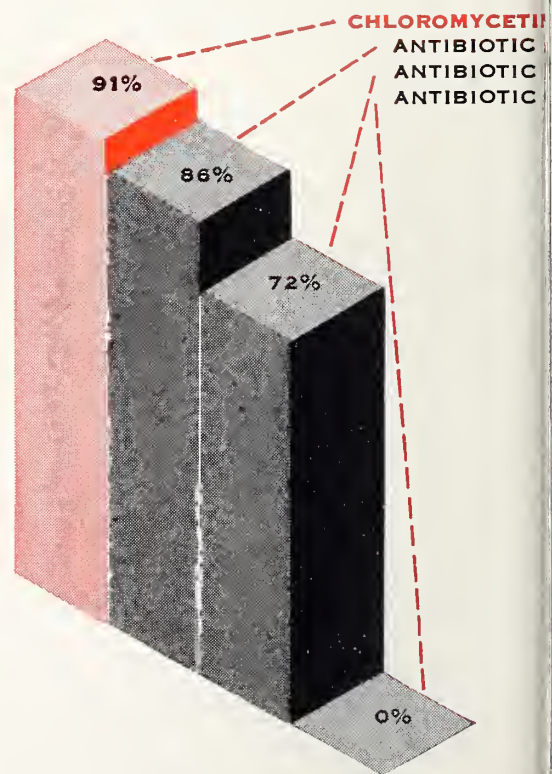
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Erythromycin in Treating Pneumonia

A 27-year-old man, a chronic alcoholic, was admitted with a history of an alcoholic spree followed by a cough, greenish sputum and chills and fever.

Physical examination showed a temperature of 104 F. and indicated pneumonia in the right lower lobe. This was confirmed by X-ray. The sputum revealed gram-positive diplococci and blood culture subsequently grew Type VII pneumococci.

The patient was treated with erythromycin, 300 mg. every six hours per os. His temperature dropped to normal by 48 hours and X-ray of the chest revealed considerable clearing by the fourth hospital day. After 10 days hospitalization, the patient was fit for discharge.¹

First Antibiotics Symposium, we reported the successful treatment with erythromycin of *H. influenzae* pneumonia and bacteremia. A second patient with *H. influenzae* pneumonia and bacteremia had a clinical course almost identical to the one previously reported, with cure obtained by treatment with 500 mg. of erythromycin per os every four hours for 14 days.

Of these 132 patients with bacterial pneumonia, 127 (96%) had a good clinical result. One patient with lobar pneumonia had a good initial response but a delayed resolution.



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Notes On Corneal Graft Surgery*

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Greaves, of the Institute of Ophthalmology, London, in a recent paper, "Experimental Penetrating Keratoplasty," stated — "corneal transplantation is now an established surgical procedure," and, further — "and although the basic requirements appear to be well understood, several major problems remain unsolved." There is no question whatsoever as to the correctness of the first portion of this quotation. The transplantation of a portion of the cornea, a total penetrating graft or a subtotal lamellar nonpenetrating graft, are sound surgical procedures and with surgical technical requirements no more difficulty than those connected with a cataract operation or with some types of glaucoma surgery. The second portion of the quotation is also undisputed. This author is breaking that down, for present purposes, to mean — the selection of cases for the surgery, the selection of the donor material, the method of graft fixation and, last, complications connected with the surgery.

SELECTION OF CASES

Any case for penetrating corneal surgery should have a scar present which invades the corneal stroma to the level of Descemet's membrane. Lamellar keratoplasty is to be done for cases in which clouded cornea of a superficial appreciable thickness overlies normal cornea above Descemet's membrane. Frequently a logical sequence of lamellar graft, followed by a penetrating one, after recovery from the first, is necessary.

The work done by the earlier operators of recent years has done much toward the selection of cases proper for graft surgery; perhaps better said, the rejection of cases in whom grafting is doomed to failure. Improvements in technique, and a better understanding of basic medical principles, will permit, in the future, logical surgery upon cases now considered a very poor risk for any improvement in vision — as this is based upon our present experiences. One hears the statement repeatedly that corneal grafting when done upon hopeless cases 'may improve vision.' Hopeless cases remain hopeless regardless of the surgery.

Cases should not be operated as an elective procedure unless all inflammation has become quiet. This applies

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especially to postinflammatory situations with posterior synechiae, as lime burns; the corneal opacities from ulcerative keratitis; and cases of impact and penetrating traumatism, as mine accidents. Lime burns frequently need the sequence mentioned, of lamellar followed by penetrating grafts. A cataract, when present in a case, had better be extracted after a successful corneal grafting.

A repeated graft operation is not uncommonly necessary. The first graft will "take" successfully but becomes opaque. This is seen in certain corneal disturbances and in traumatic corneal conditions, and in connection with cases with pannus, with symblepharon, and with corneal vascularization, even though to a minimal amount. Relative to corneal graft opacification, Thomas (J.W.T.) was perhaps the first ophthalmologist to prove that, in the experimental animal, corneal clouding always followed iris synechiae and that the extent of the clouding was associated with the extent to which the iris was adherent. In 1932, Castroviejo showed clinically, as the result of observations on over 300 partial penetrating keratoplasties, that opacification of the graft followed poor surgery; i.e., poor coaptation of graft and recipient corneal margins; infection; and incarceration of corneal tissue, presumably iris and lens capsule, as well as vitreous.

There is no doubt that the ideal situations for corneal graft surgery are keratoconus, quiescent interstitial keratitis, and cases of corneal scarring, old, healed and quiescent, residual from ulcerative keratitis.

A therapeutic grafting because of actual or impending corneal perforation as with a descemetocoele, is a logical procedure for saving the eye but not for the final correction or best improvement in visual acuity. That hope and plan usually follow further graft surgery.

In traumatic perforated cases, the graft reception area, while being prepared, will need most accurate removal surgery with a perfect pair of corneal scissors, for the condition of the recipient eye may not permit as extensive a use of the cutting trephine as would be desired. Sufficient marking of the cornea around the graft site with a sharp trephine, this stained with a dye, and then the meticulously careful removal of the corneal section are all basic. When placing the graft sutures, in these complicated cases, because of possible inaccuracy in the incision line, they must be interrupted and be placed very carefully; and each suture, as it is tied, is to be followed by the next suture at a position on the exact opposite rim of the graft — thus permitting adjustment of graft to graft site. More sutures are needed than is usual. As stated, the purpose of this graft is not visual acuity conservation at the start so much as it is saving the globe.

SELECTION OF MATERIAL

Much is being done here in the United States through bequests of donor material, but the British Corneal Grafting Act of 1952 is far in advance of anything

we have which is satisfactory. This Act, in addition to bequests by the deceased patients, permits the removal of any eye from any corpse, for corneal grafting, when no objection has been made, previous to death, by the deceased person or after death by the surviving relatives. This is far more satisfactory for donor material than that of simple bequest alone, as can be seen. In fact Rycroft stated in 1954 that this "promises to solve the donor problem." Also it is rather interesting to read a further statement by Rycroft — one to which few of us could subscribe — that is "at least three donor corneae should be at hand before any graft is undertaken." This statement has a far greater significance than its context, for it seems to suggest an adequate donor material which we can only envy.

It is quite possible that in the near future cadaver corneae will be preserved in a "Corneal Graft Bank," perhaps by rapid freezing and storage in an inert gas atmosphere, where these grafts can be kept for days until needed. Under such circumstances surgery can be done at planned times and there should be no shortage of corneal graft material. The solution of this problem rests, however, in animal experimentation and is long past due as to solution.

FIXATION OF THE GRAFT

There are two items of importance with this problem — trauma to the graft while attempting perfect surgical edge to edge coaptation, with interrupted sutures, and the plan of introducing overlying sutures or utilizing some overlying mould or splint to assist in or to achieve by itself this same necessity. Much work has been done by various surgeons in trying to devise a cutting block which will form a stepped corneal graft with a counter-sunk stepped aperture for the reception of the graft. This is still in an experimental stage. Fixation, itself, of the graft through sutures is still unsatisfactory. The use of the newer and better imported needles, and now domestic atraumatic sutures and needles, does minimize trauma when using direct approximation stitches, but the forceps trauma to the graft is still considerable. A combination of both types of sutures acknowledges dissatisfaction with both and the use of both is perhaps the better plan, at the moment. The use of overlying sutures was more applicable to the rectangular graft — while that was more in vogue (and this has mechanical advantages and disadvantages) — but they are not wholly satisfactory for the circular graft.

A note about punches when discussing the cutting of the graft is relevant at this moment. In general they are all unsatisfactory and cause unnecessary trauma to the graft.

The question of catgut versus black silk is also an important factor, especially at this time. Before the present satisfactory catgut-bearing American atraumatic needles were available this matter was not significant unless one wished to use catgut as an overlying suture. Even the wonderful Swiss needles could not be used

with a threaded catgut suture for direct approximation sutures. Clinical experiences and experimental work of some operators, in theory at least, suggests the advisability of using catgut for direct approximation. Any suture larger in size than a 6-0 chromic suture is too traumatizing, and one wonders whether this suture, i.e., the 6-0, remains in situ a sufficient length of time before dissolving, for safe and hence satisfactory fixation of the graft.

Overlying sutures alone are not satisfactory for the fixation of the circular graft, hence one must use alone or in combination interrupted catgut or black silk sutures, and these have the serious disadvantages mentioned. It seems, at this writing, that perhaps the best suturing procedure is crossing silk sutures and direct approximation 6-0 chromic catgut sutures as an adjunct; perhaps with the assistance of a grasping forceps for the graft, which permits a firm hold of the graft. The forceps made with each jaw armed with a single, tiny, but sharp tooth — these not off-set, one from the other, but so set that they meet point to point — are best. Were it not for the interposed graft material (when in use) they would be shortly dulled and useless. These minimize trauma to the least probable amount, to both graft and aperture.

Regardless of personal wishes — the most important factor in fixation of the graft is any technique which will permit, — a) perfect approximation, and retain that; b) minimal (ideal would be NO) damage to graft; c) sutures — which, if they need removal, can be removed without complications — and there is a limit to the time permissible for the retention of silk sutures — in terms of trauma; d) a needle which will permit deep penetration into graft and recipient site without perforation of either.

There has been much discussion from time to time on the advisability of cutting a graft with sloping edges. If the recipient site is cut in this manner, then also the graft must be cut similarly. If the graft is cut with the trephine held vertically and is removed without the aid of scissors, then one must cut the site for the graft similarly with perpendicular edges. If the recipient site is sloping and the graft vertical there will be unsatisfactory fitting of graft in the depths of the cornea, posteriorly — either a tissue defect, or impacted corneal tissue — depending upon the direction of slope of the aperture; i.e., how the cutting corneal scissors are held. The author feels it best to cut graft and recipient site with vertical edges without sloping either of these two.

POSTOPERATIVE TREATMENT AND COMPLICATIONS

The most significant immediate postoperative complications are dislocation of the graft; loss of the anterior chamber, occasionally, while removing sutures; anterior synechiae; delayed healing in aphakia from the interposition of vitreous fibers between the graft and the recipient cornea; and the most tragic of all, postoperative infections.

Some of these complications occur because of faulty operative technique. Such instances, theoretically, should not occur. Traumatic cases, when grafted therapeutically, are almost certain to have synechiae, both anterior and posterior; many will have lens damage as the result of the original disease and the trauma of the therapy and of the perforation. After the original grafting recovery, all complications should be corrected — other than lens extraction — and the last procedure for the visual acuity correction would be a secondary graft, this placed as near to the center of the cornea as is possible, for the first graft should have been placed to plug the area of perforation, or of impending perforation.

Vascularization of a graft is either the continuation of preoperative vascularization and/or especially if deep, seems to be the result of premature operation, that is if the etiological disease still is active. Superficial vascularization from the trauma of surgery is not uncommon, but it is of no significance because it can be corrected. Clouding of the graft is due to one of two possibilities: the first is a substitution of the corneal graft tissues by replacement (from the recipient's tissue) through proliferation of the recipient's corneal tissues. The second, according to the old theory (the corneal graft is living as an independent tissue within the host's cornea) is that the clouding and vascularization is an antibody reaction, between host tissue and graft tissue. This is something which will have to be worked out in the future and probably through experimental work.

It is probable that vascularization is a uveitic response — that it is the result of the reestablishment of or the development of primary uveitis, and that it is a uveitis separate from a form of uveitis the result of tissue sensitization. This is seen as well in the development of posterior synechiae and the not uncommon secondary glaucoma one sees later in the case — one may well wonder whether it is simply from tissue trauma. Anterior synechiae of themselves are responsible for vascularization, opacification, and a secondary uveitis — and in these instances the anterior synechiae are not a foreign tissue response by the host's ocular tissue, neither trauma nor allergy, not infaction, but faulty mechanical factors connected with the surgery, the suturing, the postoperative care and/or any complications.

There is one rather serious complication which merits a special comment and that is the matter of late iris prolapse, this occurring between the graft edge and the edge of the recipient cornea. Fortunately the complication is not too common. The author feels that the resection of the prolapse must be through a corneal incision at the limbus, separate from the site of the iris prolapse — in this way the iris can be withdrawn from its prolapsed position through a fresh surgical opening and when resected with iris scissors and iris forceps the pillars of the operative coloboma will not be incarcerated in the wound of the original prolapse.

Continued on page 6

The Value Of A Repeat Lumbar Puncture In Suspected Purulent Meningitis

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Purulent meningitis usually presents no problem in diagnosis after a lumbar puncture has been performed. This is a report on two cases of purulent meningitis which had a lumbar puncture early in the course of the disease and neither showing the usual cerebro-spinal fluid changes associated with this disease. The importance of the early lumbar puncture is stressed because an early diagnosis and treatment are imperative for the best results.

The importance of meningitis as a serious disease is emphasized by the fact that it still has a high mortality rate. The official mortality figure⁽¹⁾ for so-called "cerebro-spinal meningitis" in the United States of America 1945 through 1951 was about 25%. A more recent investigation⁽²⁾ of 45 deaths of Air Force Recruits 17-22 years of age revealed 16 died from disease of which meningitis was the most common. Alexander's⁽³⁾ analysis of the reasons most responsible for deaths in children with meningitis are (a) failure of early clinical diagnosis (b) inadequate laboratory facilities for accurate and rapid identification of the etiological agent (c) improper use of therapeutic agents.

The following case reports will present evidence of how an early lumbar puncture could have delayed the early diagnosis and treatment, if a second lumbar puncture had not been repeated in a few hours (12 hours and 6 hours). This does not imply that a lumbar puncture should be delayed but that a second lumbar puncture should be done even though the first is not diagnostic.

Case I. A 39-year-old female with a six-hour history of headache, fever and generalized aches associated with a slight sore throat three days prior to admission. Physical examination revealed a moderately acutely ill female, temperature 102, throat slightly red, neck question stiff, no Brudzinski's Kernig or other neurological signs, and no petechia. Lumbar puncture revealed normal pressure, grossly clear cerebro-spinal fluid, microscopically 6 wbc/cu mm. and culture negative with blood and chocolate agar.

Twelve hours later after the patient had received 600,000 units of procain penicillin, she developed marked rigidity of the neck, increased temperature and was irrational. A repeated lumbar puncture revealed

increased pressure, grossly cloudy fluid, gram stain revealed many polymorphonucleated white blood cells.

Case II. A chronically ill 59-year-old female with a purulent necrotizing inguinal abscess who became unresponsive while on small doses of Chlorostrept.[®] An examination revealed moderate rigidity of the neck and a semicomatose condition. The lumbar puncture revealed a pressure of 180 mm. of grossly clear cerebro-spinal fluid, 60 wbc/cu. mm., sugar 49 mgm.%, protein 65 mgm.%. The cerebro-spinal fluid grew out a pure culture of proteus vulgaris which was sensitive to chloromycetin and streptomycin. A repeat lumbar puncture in six hours revealed 640 wbc/cu. mm.

Blood culture was not available on either of these patients. The routine laboratory studies were not reported until after a diagnosis had been established.

DISCUSSION

Both of these cases were a problem in diagnosis because of the lack of positive findings on the initial lumbar puncture. Case I showed only moderate clinical evidence of meningitis and essentially no cerebro-spinal fluid findings (6-8 wbc probably within the range of normal). If this had been considered as a case of encephalitis or non-specific meningismus, valuable time could have been lost; however a repeat lumbar puncture after about 12 hours was performed and a definite diagnosis established. The cerebro-spinal fluid sugar in Case I was not done on the initial lumbar puncture which might have helped with the diagnosis.

Baumann and Koch⁽⁴⁾ have reported a microaerophilic streptococcal meningitis occurring within 18 hours after lumbar puncture has been performed. The possibility of a meningitis in Case I being caused by the first lumbar puncture seems unlikely in view of the clinical symptoms present at that time.

Case II was somewhat deceiving in the cerebro-spinal fluid findings, and it was only the change in the finding of the repeat lumbar puncture which gave enough evidence to make the diagnosis of a purulent meningitis.

The possibilities of producing meningitis in a patient with an intermittant septecemia by a lumbar puncture are demonstrated by Baumann and Koch⁽⁴⁾. They found that with experimental animals a lumbar puncture performed within a few minutes after injections of a large quantity of virulent organisms into the blood stream will almost invariably result in a meningitis due

to the injected organism. This may be due to the lowering of the cerebro-spinal fluid pressure which breaks down the "blood-brain" barriers. This was not the situation in Case II because a positive culture was obtained from the initial lumbar puncture.

Text books frequently state that with purulent meningitis the cell count ranges from several hundred to several thousand per cubic millimeter, the pressure from 200-500 mm., of water, and sugar below 40 mgm.%.⁽⁴⁾ Both of these cases were misleading in the cell count and pressure; and in Case II the sugar. However, Hill and Lever⁽⁶⁾ reported on 62 cases of meningococcal meningitis which had several cerebro-spinal findings similar to the original findings in the two cases presented here. They reported 31 out of 62 cases had grossly clear cerebro-spinal fluid, the cell count varied from 0-23,700 wbc/ cu. mm., 38 out of 62 were positive for meningococci by smear and the cerebro-spinal fluid sugar decreased in 22 out of 47. The second lumbar puncture in both cases gave the diagnosis of purulent meningitis.

SUMMARY

Two cases of purulent meningitis were presented with cerebro-spinal fluid findings not sufficient on the initial lumbar puncture to make the diagnosis early in the disease; but a repeat lumbar puncture in 12 hours and 6 hours respectively gave a definite diagnosis. It is suggested that a repeat lumbar puncture be performed if the clinical picture of meningitis and/or meningismus persists, even though the first lumbar puncture is non-diagnostic.

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Oxyuris Vermicularis

PHILIP O. GREGORY, M.D.

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Oxyuris Vermicularis is the most common parasite found in the appendix. The affection is commonly known as "pin worm" or "seat worm" infection. At the site of attachment in the cecum and appendix, the worms may produce small areas of necrosis or may even cause hemorrhage from the intestinal blood capillaries, especially at the tip of the appendix. This opens the way for pathogenic bacteria to enter the lesions and may initiate inflammatory reaction of the mucosa or submucous abscesses.

In many individuals oxyuriasis is asymptomatic. In others there may be an acute appendicitis. It is about this latter group that this article is written.

In a review of 350 cases of acute appendicitis admitted to this hospital from January 1, 1951 to January 1, 1956, 16 cases or 4.6% were found to have been caused by *Oxyuris Vermicularis*.

The youngest patient was age three, the oldest twenty-four and the average age for this group was ten. Nine of these patients or 56% were females. It was interesting to note that more than half of the group had had one or more previous attacks of pain in right lower quadrant with tenderness above or under McBurney's Point.

These patients came to the hospital with a "belly

ache." Most of them were nauseated but only three according to their history actually vomited. Temperatures ran from normal to 99° except in two cases where there was an associated tonsillitis in one and broncho-pneumonia in the other.

These patients did not seem extremely sick. Examination in all cases revealed tenderness at or near McBurney's Point. Almost without exception there was muscle spasm on deep pressure in this region. Rectal examination of these patients sometimes reveals the parasite in the feces on the examining finger. This happened in four of our cases. Unfortunately routine examination of the feces was not done and the presence of parasites was not determined before operative procedure. This undoubtedly would have avoided embarrassment to the surgeon.

The laboratory work consisted of a complete blood count and a urinalysis. In all cases the white blood count was moderately high, but never over 15,000 except in the two complicated cases. The one with pneumonia had a count of 36,000 and the one with tonsillitis 17,500. In thirteen of the cases the Eosinophile count was higher than average, running from six to fifteen. There was not much change in the differential count from normal.

Urine examination in all cases was essentially negative. Microscopic as well as chemical tests were made.

Chest x-rays were taken pre-operatively on all patients. One case of broncho-pneumonia was picked up and treated before operation. All the others had normal lungs.

All of the appendices appeared grossly diseased. Some of them were red, congested and swollen, others were full of fecaliths. One of them had a fibrinous exudate over its distal half. Free peritoneal fluid was noted in two cases. The appendix was removed and stump inverted in all cases after the stump had been prepared with phenol and alcohol.

The appendix in each of these sixteen cases was examined by our pathologist and his report of each was essentially the same. The appendix in all cases contained *Oxyuris Vermicularis* in its lumen. There was lymphocytic infiltration and lymphoid hyperplasia. In most cases diffuse thickening of the wall was noted.

The treatment of these cases in this series has been surgical since the diagnosis was subacute or acute appendicitis. However, after the definite diagnosis of *Oxyuris Vermicularis* was made these patients were all treated post-operatively with gentian violet. Dosage 10 mg. per year of apparent age in children, given every four hours for seven days. 60 mg. three times

a day with meals for eight days for the adult. Between courses there should be one week's rest.

SUMMARY

There are no characteristic objective or subjective symptoms upon which to base a definite clinical diagnosis of Enterobiasis.

Laboratory examination is of chief importance in diagnosis, as the worms are readily detected in the feces.

These cases have been reported to point out that *Oxyuris Vermicularis* should always be kept in mind whenever you suspect appendicitis especially in a child.

The parasite may not give rise to symptoms. This has led to minimizing the importance of enterobiasis, but it should be remembered that serious complications have been caused by migration of the parasite not only to the appendix but to the vagina, uterus and Fallopian tubes as well. No case of Enterobiasis should be regarded lightly.

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NOTES ON CORNEAL GRAFT SURGERY

Continued from page 3

The question of postoperative handling is quite important. R. Townley Paton, in his very recent text on keratoplasty, emphasizes the significance of this. It includes the consideration of the best time for freeing anterior synechiae, the treatment of corneal vascularization

by Beta irradiation and the local or parenteral application of cortisone, the time and frequency of post-operative dressings, the time best for the removal of sutures, and lastly, some minor points such as the assumption of normal activities.

Surplus Property: New Regulations, New Record

Simultaneously with issuance of new regulations governing free distribution of surplus property to health and education institutions, the Department of Health, Education & Welfare has disclosed quarterly figures which indicate the program is on its way to a new dollar record. In the first quarter of the current fiscal year (July - Sept.), property for which the government paid \$57,981,018 was turned over to state agencies for donation to non-profit hospitals, medical and dental colleges, universities, health departments, public school systems.

Department officials estimate that this year's gifts will pass the \$250 million mark, compared with \$204 mil-

lion in 1955-56 and \$132 million in the previous year.

The revision of regulations was necessitated by Congressional enactment of Public Law 655, making civil defense organizations eligible for surplus property donations on essentially the same basis as the health and educational institutions.

Surplus items ranging from dental burs to helicopters are on the gift list. With civil defense agencies now eligible, some surplus for which there have been no takers will get new owners. For example, Syrettes (morphine) — about 3 million of them — for which the Army paid \$10 million.

Infantile Eczema

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We are still in the dark about the etiology of infantile eczema. It has been considered an allergy by many, yet there are many points that do not bear out this theory. True infantile eczema is definitely a self-limited disease which bears a definite relation to the teething period in that it occurs when a tooth appears, and clears between times. In our larger cities dermatologists and pediatricians will treat a case, and the patient will improve until a new tooth appears. Then there will be a relapse, whereupon the parents will change physicians; the cycle is then repeated. The wonder worker is the doctor who sees the case when the last tooth comes through, and the condition spontaneously clears. This clearing in relation to teething makes us wonder if it is an allergy.

This, of course, does not apply to the eczemas seen in later childhood which involve the intertriginous areas of the elbow and popliteal fossae. No matter how severe the symptoms, one is impressed with the lack of scarring and the relatively beautiful complexions these children have in later life.

Infantile eczema is almost always seen in the fat, overweight type of baby; rarely do we see it in the thin or undernourished type. Many years ago, Finklestein, in classifying infants from a feeding standpoint, described what he called the weight disturbance type, and the classification, though not described in modern text books, is still valid. The baby, whose gain in weight is above the average normal of 5 to 8 ounces per week, may have a tendency to vomit, is often constipated, and its stools are hard, dry, white or light gray soap stools. There is ammoniacal urine, intertrigo of the diaper region and a tendency to skin rashes including eczema. This condition is primarily due to an inability to handle fats and is easily controlled by the use of skim milk or a milk in which the fats are altered such as evaporated or powdered milk. Here the hypo-allergenic milks are at their best, as the fats are low and not of the type found in cows' milk. To assist in digesting and metabolising the small amount of fats that slip by, an alkali should be used, such as Dextri-maltose No. 3 which contains 2% potassium carbonate. (Some authorities recommend the use of potassium chloride for this purpose.) It is also advisable to give a reasonable amount of orange juice. However, there seems to be an increasing number of mothers who claim their babies are allergic to orange juice and shift over to ascorbic acid preparations. The change from citric acid to alkaline citrates,

which takes place in the stomach, makes this an efficient alkali and a help to counteract the ammoniacal urine which is present in these cases.

These babies are highly nervous and the mineral unbalance and the high demand for alkali depletes the body reserve, making them unusually susceptible to rickets. They usually show the classical symptoms of calcium deficiency: the increased reflexes, blue sclera, tendency to convulsions, and the bald spot on the back of the head from the head-rolling.

There is no need to describe the obvious and well known symptoms which vary from a simple erythema of the cheeks to the moist, weeping and often infected lesions. These lesions usually begin on the cheeks but may cover most of the skin of the body and extremities. If there is itching, it is usually very severe. For some unknown reason, the seborrheic glands are usually involved as noted in seborrhoea capitis; so-called milk-cap.

In the treatment, other than the diet noted above, there are some cardinal points including the use of a bland oil, or starch baths in place of water cleansing. Prevention of scratching is difficult but essential: we were taught that one severe scratching spell could set the recovery back a week. Mild sedation with the barbiturates may be necessary. The antihistamines may give some relief but are by no means specific.

The long list of recommended local remedies are definite proof of the non-specificity of any of them. First and probably the most value is resorcin or oil of cade. For the dry types, requiring stimulation, the crude coal tars or weak salicylic acid. A bland zinc oxide and starch in yellow petrolatum base may be all that is required. White petrolatum should never be used on an infant's skin. Infected lesions require ammoniated mercury or yellow oxide ointment, or possible painting with 1% gentian violet in aqueous solution.

There has been a swing to the use of cortisone with hydrocortisone acetate ointment, 1% locally. We note, however, in a recent review of an article from Paris, the suggested use of a very high initial maintenance dose of cortisone supplemented with the hydrocortisone ointment and aspirin. And, we read with interest the following comment by Dr. Sidney Gellis, "Despite the good results reported by the authors we are not ready to accept oral or parenteral hormonal therapy of infantile eczema unless the disease is so severe that the infant suffers nutritionally. Most cases of infantile eczema

are self limited and do not warrant therapy that is potentially dangerous and whose side effects are still incompletely understood."

After long years in the practice of pediatrics, I cannot

help but take to heart the old Shakespearean advice, "Be not the first by whom the new is tried, nor yet the last to cast the old aside." This surely applies to self limited infantile eczema.

Cholecystectomy In A Case Of Situs Inversus Totalis

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Situs inversus is an uncommon congenital anomaly in which the organs are transposed from their normal location to the opposite side of the body giving rise to a "mirror image of normal." The occurrence of cholelithiasis concomitantly with this condition is an even greater rarity.

Aristotle⁽¹⁾ noted two cases of transposed organs in animals and described the condition well in his writings. In 1600 Fabricius⁽²⁾ reported a case of transposed spleen and liver in a human being. Petrius Servius⁽²⁾ recorded an instance of complete situs inversus in 1615. To Kuchenmeister⁽¹⁾ in 1824 goes the credit for the first diagnosis of this anomaly in a living person. Vehse-meyer⁽²⁾ in 1897 was the first to demonstrate visceral transposition by means of X-Ray.

It is probable than many more cases have been recognized than have been reported, because they failed to stimulate anything more than a casual interest. Many reports of this anomaly have been in cases of left sided appendicitis. Many of the reports leave a great deal to be desired in the way of supportive evidence to justify the diagnosis of total transposition.

In 1949 Johnson⁽³⁾ reported 379 instances of situs inversus totalis in the literature from 1925 to 1946. Adams and Churchill⁽⁴⁾ found an incidence of 23 in 232,112 patients admitted to the Massachusetts General Hospital and an incidence of one in more than 8000 necropsies performed there. Cleveland⁽⁵⁾ in 1926 found one situs inversus totalis in 10,000 dissections; Rosler⁽⁶⁾ reported one in 7467 autopsies. Mayo and Rice⁽¹¹⁾ noted 76 cases of complete visceral transposition in the patients registered at the Mayo Clinic during the years 1910 to 1947 and covering well over one and one-half million persons. Of these 76 patients, seven had biliary tract disease and four underwent cholecystectomies. Blegen⁽⁹⁾ reported in 1949, after an exhaustive review of the literature, 24 cases of situs inversus on whom biliary tract surgery had been performed. Since 1950

four additional cases of biliary tract surgery in situs inversus have been recorded in the literature^(12 to 15).

Cleveland advanced three theories in an attempt to explain the cause of this anomaly: 1. It results from the fact that persistence of a right omphalomesenteric vein has influenced the shifting of the stomach to the right instead of to the left. 2. The influence of the umbilical cord. In situs inversus the cord is wound spirally to the right instead of to the left and the blood column flowing in the opposite direction accounts for the turning of the heart to the right side. 3. The anomaly results from the turning of the embryo to the right side instead of the left of the umbilical vessels as it normally does.

Cockayne's⁽⁷⁾ comprehensive analysis revealed that other developmental abnormalities, such as congenital heart disease, are more common in persons with transposition than among the general population, and that the liability to defective development is much greater with partial than with total transposition.

Adams and Churchill,⁽⁴⁾ attempting to correlate these findings, suggested that there are two types of persons having transposition of the viscera. First, the real mutant, in whom there may be an inherited tendency for transposition. The other, the monster, where other anomalies may manifest themselves. In the first group the organs develop normally and the abnormal position of the organs produces no apparent harmful effect on the patient's health. In the second group the different types of associated anomalies are multitudinous; these have been found most often in the heart, the respiratory and urogenital tracts, and in the skeletal cerebrospinal systems.

Of all siti inversi the total is seen in about 75 per cent of cases. In incomplete situs inversus an isolated dextrocardia is more frequent than abnormal position of the abdominal organs. Complete transposition appears to be more common in males than females.

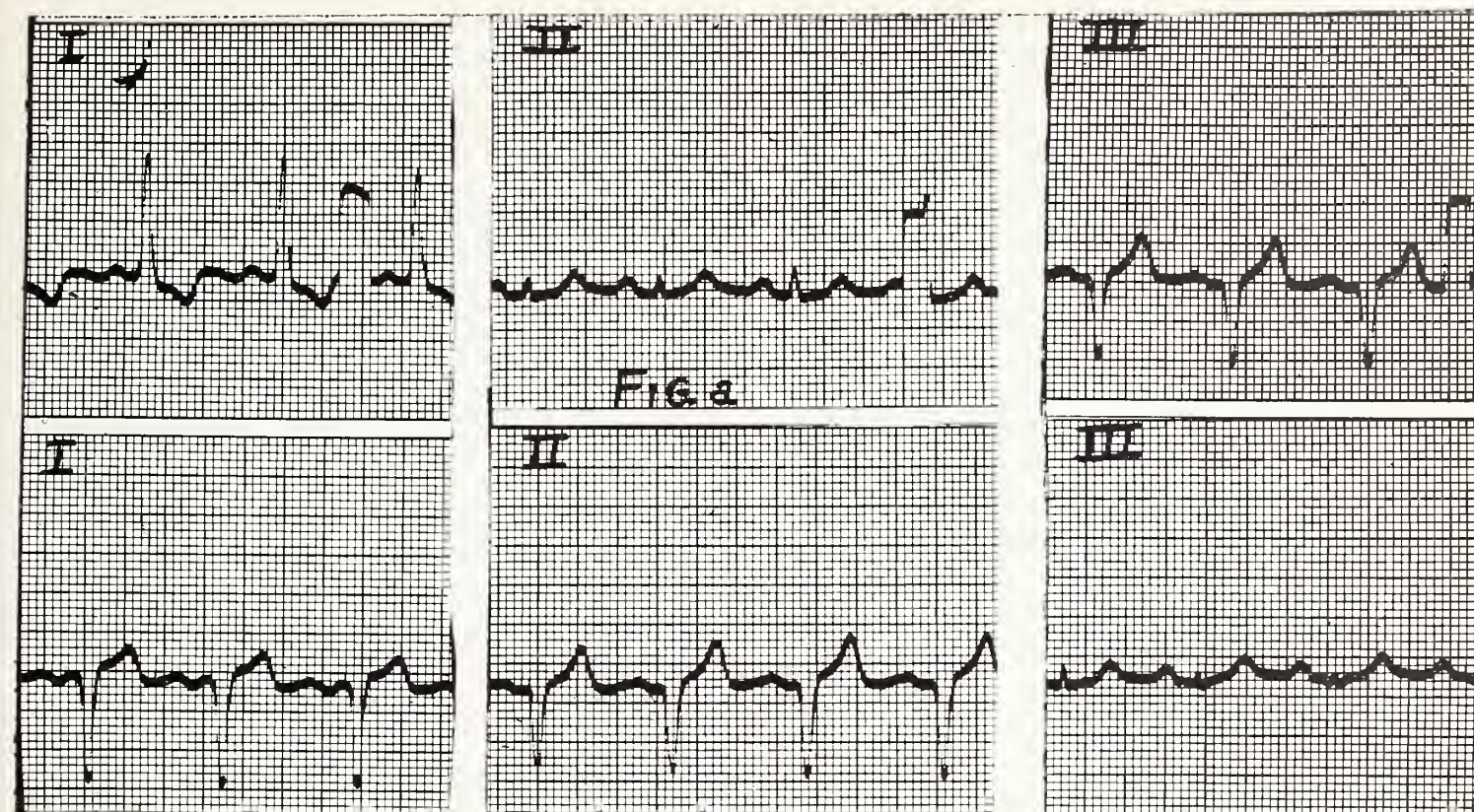


Fig. b

FIG. a: Arm electrodes reversed.

FIG. b: Regular standard leads.

Cockayne gave the incidence of males to females as 32:27, and Mayo and Rice cited a ratio of 40:36.

It is of interest to note that the incidence of bronchiectasis and sinusitis appears to be more common in patients with complete situs inversus than in the general population. Adams and Churchill found an incidence of 21.7 per cent of patients with bronchiectasis in a series of 23; Mayo and Rice reported 21.5 per cent in their series of 17 patients. This is a definite increase over the 0.306 per cent incidence of bronchiectasis observed in the general population. Kartagener⁽⁸⁾ reported in 1933 and 1935 a total of 10 cases who had the triad of situs inversus, sinusitis and bronchiectasis. This has since been called "Kartagener's syndrome."

The difficulty in recognizing situs inversus is emphasized by Blegen⁽⁹⁾ who found that an incorrect pre-operative diagnosis was made in 45 per cent of cases and that in 31 per cent an incorrect incision was done. A preliminary diagnosis of situs inversus totalis is made on finding the heart and liver transposed. Occasionally the spleen may be palpable on the right side. In male patients the right testicle is often more dependent than the left. Electrocardiograph tracings show a total inversion of lead I and transposition of leads II and III. The initial diagnosis is confirmed by X-Ray examination of the chest and of the biliary and gastrointestinal tracts which will show complete transposition of the heart and abdominal viscera.

The surgical interest in situs inversus is confined chiefly to the abdomen where early recognition of the anomaly is of great importance. It is of interest to note

that in many cases of acute appendicitis associated with situs inversus there are symptoms referable to the right lower quadrant of the abdomen. In 1935 Pol⁽¹⁰⁾ collected 46 cases of left sided appendicitis with situs inversus and in more than half the pain was prominent in the right lower quadrant. This, however, does not seem to be true in cases of biliary tract disease with situs inversus where the pain is usually found in the left upper abdominal quadrant and may radiate to the left scapula. The pain may occasionally be found in the epigastrium or in the right upper abdominal quadrant.

Although a busy physician may expect to see this anomaly only once or twice in a lifetime, it is his responsibility to familiarize himself with this unusual anomaly and to consider it a possibility, however distant, in cases of atypical abdominal pain.

A CASE REPORT

A 65-year-old white female was first seen by one of us on July 15, 1955 complaining of mild epigastric and left upper quadrant pain with nausea without vomiting of two days' duration. The pain was colicky and partially relieved with sodium bicarbonate. For many years she experienced dyspnea, orthopnea, and sometimes anginal pain without radiation, following physical exertion. Nitroglycerine usually, but not always, relieved her anginal distress, and it also seemed to alleviate her abdominal pain. Jaundice had never occurred. Due to chronic constipation, the patient had resorted often to laxatives over the years. She gave no history of previous attacks of acute cholecystitis but claimed a definite intoler-



Left-sided poorly functioning calculous gallbladder.



Dextrocardia and left ventricular hypertrophy.

ance to fatty and fried foods of longstanding. The patient had known of her dextrocardia for 30 years.

Her past history revealed that she had been relatively well all her life except for an anterior transmural myocardial infarction in 1951. In 1949 she underwent a diagnostic uterine dilation and curettage. She had 10 pregnancies and carried 9 to full term; one ended in a spontaneous abortion at 5 weeks. Of the 9 full term children, 5 are living and well and 4 died in early infancy.

Her mother died of pneumonia at the age of 55, and her father died at 72 of unknown causes. One brother and one sister have been operated for biliary disease. The family history is essentially negative otherwise.

Physical examination revealed the patient to be an elderly woman of average stature, well nourished, well developed with no apparent sign of jaundice. The temperature was 98.8; pulse 76, regular and of good quality; respiration 18; blood pressure 122/80. Examination of the chest showed absence of cardiac dullness and apex beat on the left side. The cardiac dullness extended from the sternum to the right mammillary line. The heart sounds were regular in rate and rhythm and were heard most clearly on the right side. A grade II systolic apical murmur was noted. Examination of the abdomen showed moderate tenderness in the epigastrium and marked tenderness with some rigidity in the left upper quadrant. The smooth edge of the liver was felt one finger below the left subcostal margin on deep inspiration. The rest of the examination was negative. A

tentative diagnosis of complete situs inversus with acute cholecystitis was made and the patient admitted to the hospital.

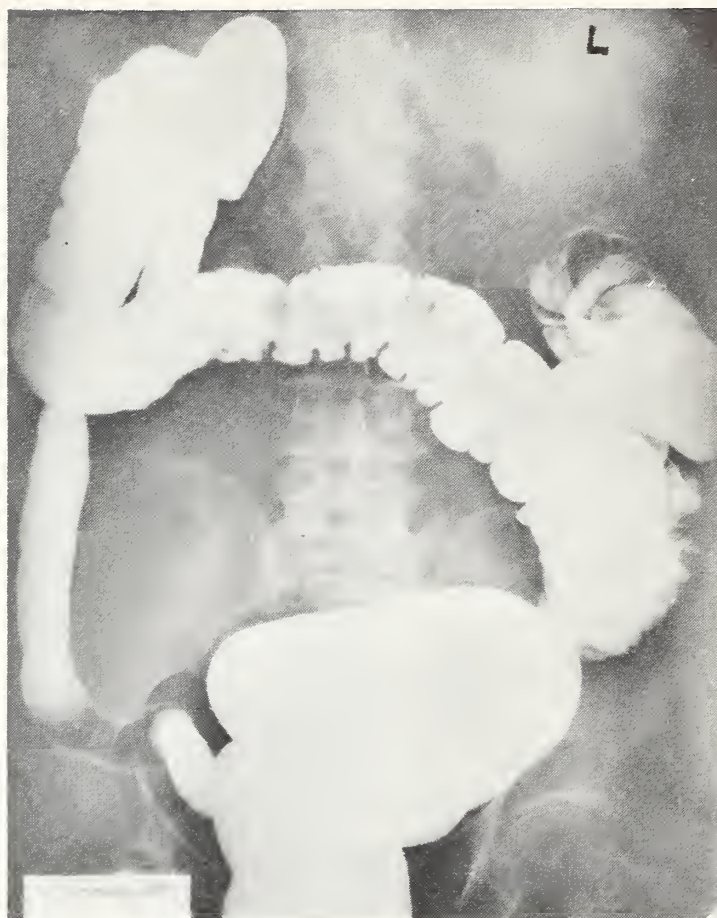
A surgical consultation was had and conservative medical management was recommended for the present with the suggestion of an interval cholecystectomy later if symptoms persisted. The patient was discharged on the 10th hospital day in a much improved condition. She was instructed to follow a low fat diet and to continue taking her medications. Before her discharge, X-Rays of her chest, biliary and complete gastrointestinal tracts showed a dextrocardia and complete transpositions of the abdominal viscera with cholelithiasis in a left sided gallbladder. Electrocardiographic tracings taken with the regular standard leads showed inversion of lead I and transposition of leads II and III.

At first the patient fared well on a trial period of medical management; however, soon she began again having recurrent bouts of epigastric and left upper quadrant pain as well as increased anginal pain. At this point she was re-admitted to the hospital for elective surgery.

Under spinal anesthesia a left rectus incision was made. The entire abdominal anatomy was reversed. The omentum was densely adherent to the gallbladder which was of average size and contained many calculi one of which was impacted in the upper third of the cystic duct. The common duct was found free of stone. The appendix was brought up through the same incision from its left sided location and removed. The



Barium meal in a right-sided stomach. Liver on left side.



Barium enema showing cecum on the left and descending colon on the right.

patient made an uneventful recovery and was discharged on the 9th post-operative day. Four months post-operatively the patient is found free of abdominal complaints and greatly relieved in the intensity and frequency of her anginal pain.

CONCLUSION

This is the report of a case of situs inversus totalis complicated by cholelithiasis and recurrent anginal pain attacks in whom a cholecystectomy was followed by a marked subsidence of anginal distress as well as completed disappearance of symptoms referable to biliary tract pathology.

There is obviously a great variation in the incidence of occurrence, and possibly of recognition, of this anomaly among the various authors on this subject. Even though the incidence has not been definitely established, it seems probable that the condition is much more frequent than it has been generally assumed and that an incidence of 1 in 10,000 of the general population may be a fair estimate.

The transposed organs develop normally and their position appears entirely compatible with the patient's health and longevity.

The incidence of bronchiectasis, with or without sinusitis, appears to be considerably more common in patients with situs inversus.

There is no evidence to indicate that disease of the biliary tract is more common in situs inversus than in the general population.

The tendency of pain to be referred to the right from a viscus transposed to the left is not so common with cholecystitis as with appendicitis.

This unusual anomaly may be diagnosed during a physical examination and confirmed by X-Ray studies. Occasionally it may be discovered accidentally at operation.

The surgeon must always be aware of the possibility of this condition existing in cases of obscure abdominal pain particularly in the presence of dextrocardia.

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Dysmenorrhea - A Psychosomatic Challenge*

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Dysmenorrhea has received the attention of thousands of physicians over a period of hundreds of years. There are many references to it in the writings of the ancient Persians, Arabs, Jews, Greeks, and Romans, as well as treatises emerging from the dark and middle ages, the renaissance, and the intervening four hundred years which lead to the twentieth century. Such a continuum of interest can be accounted for by the prevalence of this condition which has always been disturbing to the patient and provocative to her physician. Since the literature is incredibly voluminous, it would be impossible to attempt even the most cursory resume in the limited scope and length of this paper. Therefore, a very few references will be cited, chiefly to emphasize the tremendous range and variation given by different observers to the various aspects of dysmenorrhea. (An excellent bibliography will be found in Kroger and Freed's textbook, "Psychosomatic Gynecology," W. B. Sanders and Co., 1951, from which many of the author's references are borrowed.)

Davis⁽¹⁾ believes that degeneration of the ganglion cells in the uterus and its peripheral nerves plays a significant role in the pathogenesis of dysmenorrhea.

Browne⁽²⁾ mentions the importance of pathological changes in peripheral nerves.

Hunter⁽³⁾ stresses three etiological factors, i.e., (A) a lowered pain threshold, (B) specific physiologic changes associated with ovarian activity, and (C) what he describes as a characteristic sensory conditioning process.

Kosmak⁽⁴⁾ states that he feels that dysmenorrhea is intimately linked to repressed past experiences which are not consciously recognized by the patient.

Wergraf⁽⁵⁾ suggests that dysmenorrhea is understandable as a psychosomatic entity. He believes that menstruation is linked to buried (unconscious), painful memories and feelings. The neurotic woman, he thinks, associates anxiety with her periods, thus establishing a vicious circle.

Wertham⁽⁶⁾ mentions that the anatomical changes described by various investigators might be the end-product of emotional disturbance. He was astonished to find that many of the described lesions proved to be artifacts but were still carried in the literature as pathological observations. (In this connection the author of this paper is reminded of our former ideas concern-

ing the pathology involved in the syndrome known as Status Thymus Lymphaticus, which as time and more controlled investigation has now proven, often proved to be more adventitious than pathognomonic.)

Wittkower and Wilson⁽⁷⁾ studied 57 unselected patients with "Primary" dysmenorrhea. He found that as children, they showed five to seven times more emotional maladjustment than his control group. As adults, they could be divided into two main personality groups; one, those who evinced a deep resentment of their feminine role, and, two, those who were physically immature and who also were characterized as being shy, "shut-in," chronically anxious, and unusually complaining. (A series by Aller corroborates all the above observations.)

Taylor⁽⁸⁾ includes dysmenorrhea in those disorders of the reproductive system which are due to circulatory and autonomic unbalance of the reproductive organs based on psychosomatic factors. Therefore, he states, it is logical to assume that primary dysmenorrhea is more than likely a disorder of the autonomic nervous system closely allied to other psychosomatic manifestations such as bronchial asthma, colitis, and certain types of headaches.

Benedek T.⁽⁹⁾ thinks that dysmenorrhea results from inability of the ego to keep repressed psycho-sexual conflicts from mobilizing anxiety and general nervous system reactions which in turn predisposes the woman to an over-reaction to the pre-menstrual hormonal change.

Deutsch, H.⁽¹⁰⁾ stresses the emotional significance of menstruation as well as the unconscious knowledge of the biological significance of the menstrual cycle. The character of the interpersonal relationship between mother and daughter will determine the daughter's attitude toward the menses. Many girls who have not been adequately prepared for the first menstruation will react with hostility and aggression. If mother is resentful and rejects her own feminine role, the daughter may incorporate her attitude.

Mackenzie, Locke L.⁽¹¹⁾ is impressed with the striking frequency of severe dysmenorrhea in "The frigid primipara."

Franzblau, Abraham N.,⁽¹²⁾ among other provocative views, brings to the reader's attention the fact that although the rectum and bladder are equipped with sphincter muscles, the opening from which menstruation emerges has no sphincter and hence is not amenable to control; therefore, the woman, by contrast, may feel quite helpless and overwhelmed.

To all, therefore, who are somewhat familiar with the bibliography and current views concerning dysmen-

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orrhea, it is clear that by some it is regarded as a pure neurosis, and from the other extreme, it is considered in terms of organic, cellular pathology. It has been so variously thought of, it seems to the author, because of the different attitudes, disciplines and sophistications of students of the subject. When Hendrickson asks us to consider this condition almost entirely the result of a disturbance of water and electrolyte balance, hence remedial by "Neo-hydrin," the author is as skeptical as when Wengraf practically excludes the homeostatic and physiological factors in his enthusiastic embrace of the psychological elements. The more intelligent concept of multi-faceted etiology and pathogenesis which is becoming increasingly applicable to many morbid processes both mental and physical, seems particularly germane to dysmenorrhea.

Sir William Osler stated some fifty years ago that whenever one finds competent students recommending different therapies or medications for any one disease or syndrome, one can be certain that the true pathophysiology and etiology are obscure. This wise statement is as valid in 1957 as it was when enunciated. Since the treatment of dysmenorrhea (depending, the author thinks, more on *who* prescribes rather than the exact nature of the dysmenorrhea in any specific patient) includes attempts to alter water balance, ventral suspension, dilatation and curettage, use of hormones, sedatives, "tranquilizing" drugs, sedatives, narcotics, placebos, psychoanalysis, hypnotism, psychotherapy and additional endeavors too numerous to tabulate, one cannot escape the conviction that this symptom-complex is very differently regarded, and hence very differently treated.

In the last paragraph of his excellent paper⁽¹³⁾ "Concerning the Concept of Psychosomatic Illness" in the August 1956 issue of *The Journal of the Maine Medical Association*, Vol. 47, No. 8, page 247, Morton McMichael, M.D. writes, "Although few physicians will ordinarily have the time to attempt any searching investigation of the personality make-up, a doctor is nevertheless often in a position to evaluate environmental stresses, and even more important, to help the patient work out a satisfactory solution to the problem which these present. In so doing he may be pleased to find that he has effected a cure." The author of this paper agrees with Doctor McMichael's comment, but feels some additional observations may be in order.

Perhaps the word "psychiatric" or even "psychological" arouses resistance and even timidity in the minds of SOME internists and gynecologists. Nevertheless, the personality of each patient, no matter what his or her complaint may be, *must* be carefully if not *searchingly* considered and appraised. Since everyone's personality as seen in cross-section, at any given time, depends, to a great extent, on the accumulation and impacts of past experiences, and indoctrinations, it is essential for *every* clinician to acquaint himself with his patient's earlier attitudes. The fact that such a history takes time to elicit cannot be denied, but so do many

other clinical attempts to encompass and understand a total situation. As a matter of fact, it is the author's opinion, that the time required need not be exorbitant, a half hour devoted to such investigation will often suffice, and it is hard to believe that any doctor is too busy to allocate thirty minutes to such an investigation. If he does so, with the belief that his efforts will almost surely contribute ESSENTIAL (not peripheral) information he will always find his total comprehension greatly augmented as a result of which, he will be able to deal more effectively with his patient's needs.

For example, granted that alterations in water balance may account partially for dysmenorrhea, it is useful to keep in mind that along with other homeostatic regulatory processes, the autonomic nervous system, both sympathetic and parasympathetic, are intimately linked with, and dependent upon, the hypothalamic and other mesencephalic stations, which, in turn, are subject to great fluctuations of function influenced to a large degree by emotional factors both conscious and unconscious.

SUMMARY

Dysmenorrhea can be thought of as a symptom-complex, behind which the character, upbringing, parental climate, and early acquired precepts play determining roles in crystallizing a young girl's original ideas towards her menses. Her attitude about her menstruation will be found to be closely linked to her other notions having to do with her taboos, fears, yearnings, and frustrations related to her total sexual situation and most importantly the way she handles her role as a female. In the author's experience, women who suffer from dysmenorrhea *always* manifest other evidences of psycho-physiological maladjustment, which may include anxieties concerning coitus, gastro-intestinal function, circulatory fluctuations, headaches, vague numbness of the extremities, parasthesias and variations in urinary frequency. Such women are often subjected to wide mood-swings, often show excessive dependency needs, and can be clearly thought of as people with unexpressed yearnings, resentments, and fears. Behind these emotions may often be suspected well-concealed homosexual trends. It should be noted that these same women will usually be plagued by great concern about the menopause, and can be predicted to have trouble during pregnancy, at the time of delivery, during the period of lactation, and in the assumption of the maternal role. In addition, if they are working women, they frequently have difficulties related to the acceptance of such responsibility, since having a job, to them, is an additional hurdle in their basic conflict concerning their feminine identification.

To re-emphasize: *Dysmenorrhea should never be regarded as either a psychological or physiological entity even in the presence of definite organic, cellular pathology.*

The treatment, taking into account these views, must be directed toward the neutralization and "undoing" of

many superstitions, prejudices, taboos, bigotries, distortions, and false physiological beliefs, usually planted by relatives or badly informed, well-meaning acquaintances. Every woman complaining of dysmenorrhea deserves a thorough gynecological history and examination as well as an adequate medical and social (personal) history.

The ROUTINE use of hormones, sedatives, or the indiscriminate prescribing of any other medication is to be avoided unless there be SPECIFIC indications for their employment, and this caution also applies to minor or major gynecological procedures including curettage, the use of tampons, cauterization of cervical erosions, and ventral suspension. The gynecologist must be convinced that whatever he recommends has a sound and specific rationale. In this connection it is well to remember that many women, before coming to the gynecologist, have been over-treated pharmacologically, and need re-education and large, repetitive doses of reassurance far more than codein, hormones or a fresh endometrium.

This paper, if it achieves nothing else, points up the challenge of dysmenorrhea to physicians of all specialties, orientations, and disciplines. It is the author's hope and belief that our profession will so approach the problem, which it seems can only be dealt with satisfactorily in these ways.

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Freedom In Medical Practice*

SPECIAL ARTICLE

DWIGHT H. MURRAY, M.D.

President

American Medical Association

Almost six months have elapsed since we last met to deliberate and act on medical affairs. The time has passed quickly, but not quietly.

The rumble of war and revolution has resounded in our ears. The din from political battles has been deafening.

All of us . . . sooner or later . . . learn that today's events do not just swirl around us, but involve each of us. As doctors we cannot get away from them by claiming that our only interest is in the sick, and that we cannot be bothered by political, social and economic problems. These matters demand attention from the doctor as well as the lawyer, the businessman, the newspaper editor, the labor leader and the worker.

If we are concerned about what happens on the international, national and local fronts — and we should be — then certainly we cannot afford to be disinterested in what happens in our own area of health and medical affairs. Yet there is apathy in our ranks.

REPLACE APATHY WITH ACTIVE, UNITED PROFESSION

Today there is a greater need for a united, forceful and informed profession than ever before. We have been caught in the throes of a social revolution which demanded something for nothing. Changes have been taking place all around us, and medicine has not escaped unscathed.

For example, in a few days Public Law 569, the bill providing medical care for military dependents, becomes effective throughout the land. Contracts already have been signed with the government by the majority of our state societies. No longer can any doctor claim that this law does not affect him. No longer can he say that government laws really are not changing the practice of medicine.

Public law 880, better known to all of us as H. R. 7225, is another case in point. Medicine now is facing the problem of protecting the taxpaying public from abuses and of cooperating with the government to carry out the provisions of the law. The law is now on the books, and we must provide the leadership necessary to make it work as well as possible.

It was encouraging to hear Ezra Taft Benson, secre-

tary of agriculture, say last week before the American Association of Land Grant Colleges and Universities:

"Sooner or later, the accumulation of power in a central government leads to a loss of freedom. . . . Raids on the federal treasury can be all too readily accomplished by an organized few over the feeble protests of an apathetic majority. With more and more activity centered in the federal government, the relationship between the cost and the benefits of government programs becomes obscure. What follows is the voting of public money without having to accept direct local responsibility for higher taxes. . . .

"If the present shift of power from state to federal authority which started 25 years ago is allowed to continue, the states may be left hollow shells."

It was encouraging to hear such comments from a member of the President's Cabinet. I only wish that all members of the official family, and more important, every member of the United States Congress, felt the same way.

The expression of this philosophy, with which medicine so heartily agrees, sounds good, but putting it into practice is the thing we are really interested in.

Today the medical profession along with business and industry is caught between those who desire to promote sound government and those who desire even more intensely to perpetuate party power. Unfortunately, in recent years a benevolent federal government appears more attractive to the voting public than the preservation of individual freedom. Medicine must do its utmost to reverse this trend.

MEDICAL FREEDOM ESSENTIAL

In my travels around the country as your representative the last 18 months, I have seen little dissension or rancor within our ranks. However, I must report that I have seen too much complacency over governmental encroachment into medical affairs. And I am deadly serious when I say to you that apathy by the few, or by the many, can be detrimental to all.

No nation can merely reap the benefits of freedom; it also must sow seeds of freedom.

In medicine the situation is the same. If an apathetic medical profession takes its freedom for granted, it will be the beginning of the end. A strong, free profession must work for freedom so that it may live in

*Delivered at the opening session of the House of Delegates at the clinical meeting of the American Medical Association in Seattle, Washington, November 27, 1956.

freedom. And history tells us that once medicine loses its freedom, other fields of private endeavor are immediately in danger.

I do not wish to paint a dark or distorted picture of medicine's free status and its stature in America today. But I do believe words of caution and an appeal for vigilance are in order.

The road of apathy and disunity can only lead to disorder and perhaps disintegration, and we must sound a warning to all our colleagues who don't care, or who are pulling in the opposite direction. The road of alertness, action and unity is the proper road for all of us to be traveling together.

If I had just one wish for the coming year, it would be to command the time and talents of the 160,000 physicians in the American Medical Association. I would set us all to the task of emphasizing and re-emphasizing the absolute necessity of patient and professional freedom.

PATIENT'S RIGHT TO CHOOSE HIS DOCTOR

I believe it is one of our prime responsibilities to prove to our patients that their right to choose their doctor is a most important one.

Free choice brings a bond of confidence between doctor and patient which no compulsory medical system can create. It means that the patient knows the physician will be interested in him as a person, not as just a serial number of the 2:45 appendicitis case.

For the doctor free choice means that the patient has selected him for his abilities, training, sincerity and personality. When a patient comes into my office, I know he has made a choice. And from that moment there begins a physician-patient relationship of the highest order. To me the patient is someone special, and I in turn hope I am someone special to him.

Once the patient has made his choice, the physician automatically assumes an unqualified responsibility to the patient. No system of medical care that uses a third party to bring doctor and patient together can match our kind of cooperative performance for the treatment of illness, the cure of disease and the betterment of the patient's health.

Freedom to select a doctor is part of everyone's great freedom to choose — to choose what he wears and eats; where he works and worships, and how he votes. Take away any part of this freedom and great damage is done to our democratic system.

FREE CONDUCT IN MEDICAL TREATMENT

Another freedom closely tied to freedom of choice is freedom in the conduct of medical treatment.

At the recent meeting of the World Medical Association in Havana, Cuba, Dr. Rolf Schloegell of Germany made a stirring defense of free conduct of medical treatment. He told us that the medical profession believes the attending physician alone is competent to decide what measures he deems necessary and will apply in order to bring about the desired improvement. He

warned too of the danger of excessive restriction on the freedom of the patient and the attending doctor.

Yet the trend toward extending social security in the medical care field has been steady and has accelerated since the end of World War II.

The dangers of shifting responsibilities for medical care from the patient and doctor to the government are obvious. The caliber of medical care cannot be as high when both patient and doctor are dependent upon government. Initiative succumbs to dictation, and self-reliance is replaced by the crutch of government.

We do not deny that there is an area of legitimate concern by the government for the health and welfare of the people. But each year government seems to extend that area. We get some idea of this expansion from the new federal medical budget.

This year, according to our Washington Office, the average family will be paying \$54.61 for the U. S. Government's health and medical activities. And the total expenditures this year amount to 2½ billion dollars — 290 millions more than last year. Even in an over-all federal budget of 61 billion dollars, the total health cost of 2½ billions is not insignificant. It is a billion dollars more than the cost of running the Commerce Department, half a billion more than the Agriculture Department and six times more than the Interior Department's budget.

Many expenditures obviously are necessary to keep up our unsurpassed public health standards, and research may pay rich dividends in scientific discoveries. But there is no doubt that much money is being spent on medical activities that should not involve government participation.

The trend is to spend more and more government money on health and medical matters because it is good politics. Apparently many Americans still want to see government in the role of a big brother, dishing out so-called gifts and bargains under the guise of benevolent economic planning.

I believe it is our duty, as it is everyone else's, to combat the attitude of "what's in it for me?" and to promote the long-honored creed of "what's best for all Americans and our free society?" I think that a nation can drift into state medicine inch by inch just as surely as if the scheme were foisted upon a people overnight. The "drift" method may take longer but the result will be the same.

So it is time all of us sounded the alarm against soft and superficial security and against the invasion of personal responsibility. It is time we stood up together for militant freedom and for full rights and responsibilities of the individual.

BELGIAN DOCTORS TURN BACK GOVERNMENT

There is no better example of what a unified medical profession can do than in the story of the recent fight of the Belgian doctors against the government's proposals for a state service of medicine.

Without consulting the medical profession the Belgian government proceeded to draft rules and regulations of health to be incorporated in the nation's social security legislation. Under the proposals doctors were to sign an agreement to abide by the present rules and any later regulations. For the patient there would be the usual red tape in getting medical care.

When the Belgian doctors learned of the scheme, they met in conference with the government. They told the government what they wanted and what they would not accept. The government agreed.

For several months everything was quiet. Then the Belgian doctors suddenly read about the new health bill that the government was sending to Parliament. It was quite contrary to the earlier agreement worked out by the profession and the government. But the bill was passed quickly.

The Belgian medical profession protested and said it would not be placed under the Ministry of Labor. Instead the doctors proposed to set up their own plan of medical assistance.

Before long, the government saw that the medical profession meant business and that the doctors' plan was an attractive one. So it declared that its own bill was not in force and could not be in force without the consent of the medical profession.

To me this fight against legislative intervention in medical care is excellent evidence that the profession can defend itself if it unites to defend the basic principles of freedom and if it offers constructive proposals. By using the Belgian national motto, "in union there is strength," the medical profession showed doctors everywhere that dangerous government plans can be turned aside by the strong.

I also read recently in the *Journal of the World Medical Association* of the fight of the medical profession of Malta against a British government scheme to introduce a full-time salaried medical service, without the right of private practice, on an island dependency of Malta. Here again the doctors reacted with unity and strength, and successfully thwarted the government's plan.

There is a lesson in these stories from Belgium and Malta. They prove that a unified profession has a great political power for good — the good of the patient, the doctors and the nation.

CONFIDENCE AND UNDERSTANDING NEEDED

While we are developing unity within our own ranks, I believe it is equally important to continue to build up the confidence and respect of our patients and to make our legislators aware of the necessity for freedom in medical practice.

Let us never reduce the quality of service we render to our patients, and never lose the personal touch in medicine. Where there is any opportunity to improve upon our medical care, let us seize it and show our abilities to do an outstanding job. Satisfied patient-customers will give us deserving support when we need it.

We also should realize that the destiny of medicine can be determined to a large degree in the halls of Congress. If this be true, then it is even more important that we take an even greater interest in those who elect the Congressmen. Sympathetic understanding of our position by federal legislators through the voting public will be an insurmountable deterrent to the forces supporting state medicine.

The day has come, gentlemen, when we can no longer look upon medical economics and social changes merely as issues to be considered during our limited leisure hours. Our interest in them cannot be superficial or intermittent.

We now must pay daily attention to these matters. Medical socio-economic affairs can no longer be just incidental with us. They must be a vital part of our life and of our profession.

Each of us, I believe, should dedicate himself to the words included in the oath of office taken by Presidents of the A.M.A.

"I shall champion the cause of freedom in medical practice and freedom for all my fellow Americans."

As doctors, representatives to the A.M.A. and as spokesmen for the A.M.A., let's remember these words and live by them. And to alter a phrase of President Lincoln's only slightly: Let's make common cause to keep the good ship of medical freedom on this voyage, or nobody will have a chance to pilot her on another voyage.

Just Figures

Traffic Accidents — 1955

Killed 35,586

One killed about every 14 minutes

Totally disabled 100,000

One injured approximately every 25 seconds

Cost: 4.4 billion dollars

Factors: The Road — The Vehicle — The Driver

In the past 40 years in the U. S.

75 billion dollars have been spent for roads

2½ trillion dollars have been spent for new cars, accessories, fuel, etc.

Less than 4 million dollars spent on Highway Safety.

The Journal of the Maine Medical Association

DANIEL F. HANLEY, M.D., Brunswick, Editor

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Guest Editorial

Mental Out-patients

Shakespeare's Glendower boasted, "I can call spirits from the vasty deep."

Hotspur answered; "And so can I, and so can any man. But do they come when you do call for them?"

Statutes sometimes have a touch of Glendower about them. They call in clarion tones, but the spirits don't answer. It is money that talks, but the statutes don't provide the money. The legislature must do that.

In the Statutes of Maine Sec. 148, Ch. 27, it is written that our two institutions for the insane and feeble-minded shall organize, under a competent physician, a bureau of community service.

By the terms of the Statute, this bureau is to cut a wide swathe. It is to supervise persons who have left the institution and are on trial at home; it is to advise indigent persons as to how they may be cared for; in co-operation with state departments, it is to recommend suitable treatment for retarded or incorrigible school children, and for children who are brought before a juvenile court. And it is to study the whole field of mental disease, with a view to forming a better public sentiment and policy.

The Statute is comprehensive and designed to meet a vital need; but the institutions concerned have not been able to carry it out as a whole. They simply have not had the staff for it, and have had to limit themselves to giving supervision to former in-patients now at home on trial visit.

This is not enough. An effective out-patient department should probe deeper. It should go into the homes and home environments of the patients, and educate their families to accept these patients as a home responsibility. Such families are sometimes too easily frightened by mild departures from the norm; with better understanding of the patient's case, they can be brought to accept him and turn his trial visit into permanent home residence.

In this way the rate of re-admission to the hospital could probably be cut by as much as 10%. So at least it has proved with the Massachusetts State Hospital system.

Again, with more funds, a boarding-out program might be set up. This is a release to what are in effect nursing-homes. This is a half-way stage between hospitalization and full responsibility. The environment is more normal; and this stepping-stone, so to speak, gives the patient a new sense of self-reliance, and prepares him for later full independence. This costs the state a little more per capita than state hospitalization, but the gains are well worth it. Boarding-homes have proved their usefulness in New York and Massachusetts for many years.

It is to be hoped that the incoming Legislature will appropriate sufficient money to make this statute effective.

Across The Desk

The Continuing Process of Medical Education

SAMUEL PROGER, M.D.*

The Bingham Associates Program is concerned with the continuing education of practitioners. The following relates to an aspect of the Bingham Program directed toward such a process of continuing education.

It is a truism that the best medium for medical education in practice is a patient. But it does not follow that experience alone, that is, seeing a large number of patients, is suitable education. Experience can mislead, distort and confuse as well as guide, clarify and inform. The greatest challenge to continuing medical education in the field of practice is to make experience in medical practice truly educational. The principles learned in medical school, the practicalities learned as a house officer, are soon largely wasted education if they are not followed by a continuous process of learning through patients.

The medical school should properly play a role in this process of learning. It can do so principally through its teaching hospital, and that most effectively by participating in practice with the physicians whom it hopes to influence educationally.

When a physician's practice can be related to a medical school hospital, then the educational activities of that hospital become a part of the physician's daily medical experience, as those of his own community hospital are a part of this experience. The potentiality for learning then is the physician's office, his community hospital and his medical school hospital (or other reference center).

Traditionally, medical schools have set standards for medical practice by training students and house officers. It was assumed that the principles and techniques learned under such circumstances would have become sufficiently engrained so that they would somehow continue to be effective through a lifetime of practice. The facts do not bear out such an optimistic appraisal of the long term effects of the medical school. For the

further removed one becomes from the direct medical school environment, the less becomes the influence of that environment. Basically the problem of continuing education, and hence, to a large extent, the problem of better medical care is one of somehow keeping the practitioner under the influence of a medical school throughout his active career. By so doing one attempts in effect to make the standards of the medical school hospital the standards of the practitioners in the region.

How well can the standards of the medical school hospital be disseminated? The clinical teaching of most medical schools in their principal hospitals is generally remote from the day to day practice of even local, let alone regional practitioners. The teaching activities of the medical school hospital are largely centered around "service" patients, which by definition are patients who pay little or none of their hospital costs, and whose hospital care is entirely independent of any outside private physician. Hence outside physicians are not directly influenced by the work on such "service cases." Where the teaching in school hospitals is done on private patients of individual staff physicians of the school hospitals, important teaching limitations are encountered, so far as students and house officers are concerned, although the staff member himself and his patient benefit considerably from the teaching environment. However, such staff membership is of necessity limited, and the vast number of non-staff outside practitioners are not influenced directly by what goes on in the school hospital, except as they may have worked in such a hospital in the past as students or house officers. If the school hospital is to bring its influence to bear directly upon a large number of private practitioners, it can do so by participating in private practice with such practitioners. For to the extent that the medical school hospital center actually engages in practice regionally, it is of necessity influencing practice regionally. It is then not only setting standards, it is employing them in such a manner as to make them at least partially the standards of the "affiliated" practitioner.

*Professor of Medicine, Tufts University School of Medicine; President, Bingham Associates Fund.

What Every Maine Doctor Should Know About The 20 Megaton Thermo-Nuclear Bomb and The Target Areas In This State*

The Federal Civil Defense Administration has just recently completed a re-evaluation study of potential

thermo-nuclear target areas within Continental United States. Military bases and installations were included on the official list the first time.

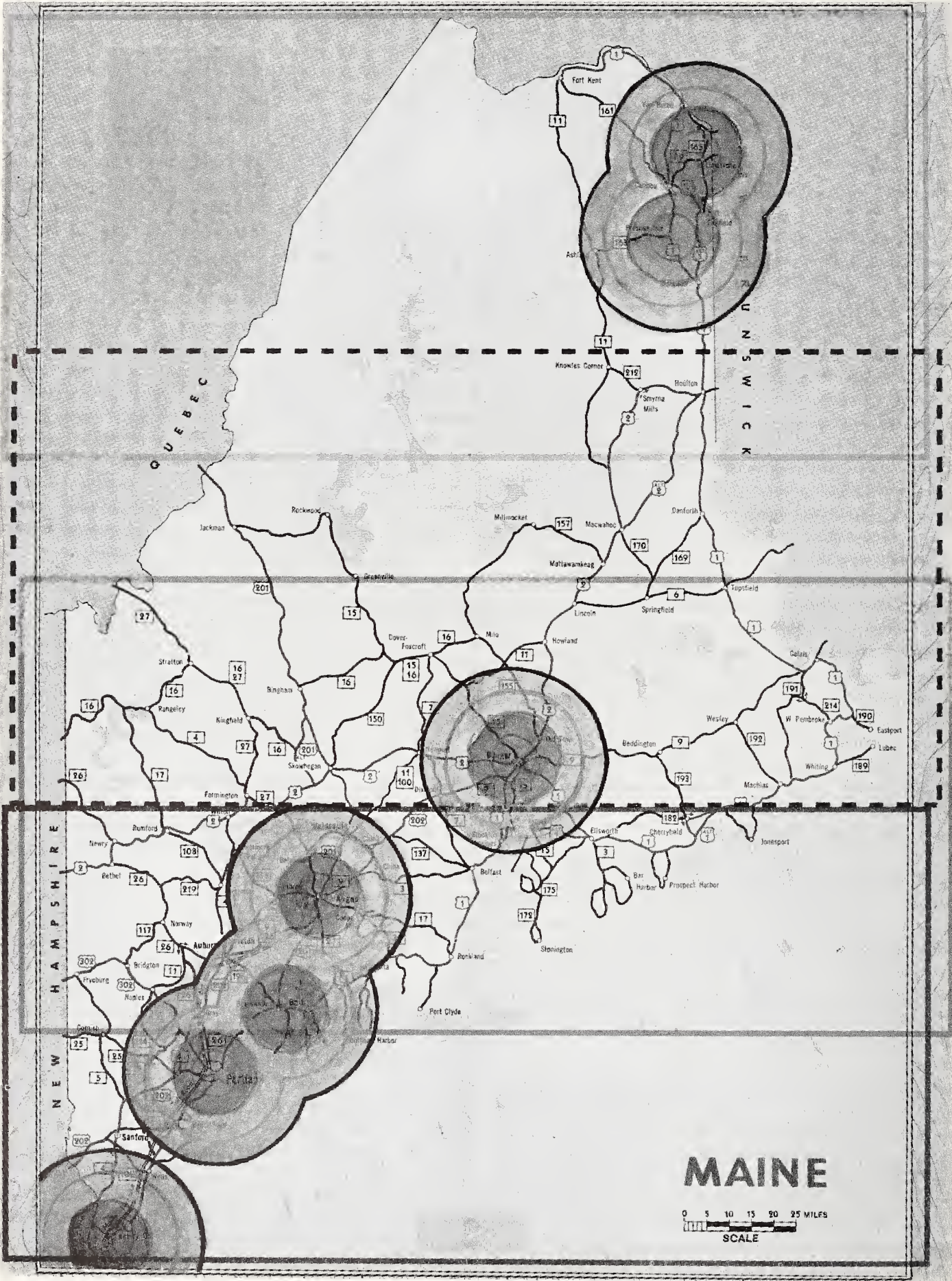
Last month Colonel Harry A. Mapes, the State Civil Defense and Public Safety Director was officially noti-

*Charles W. Steele, M.D., Lewiston; Chairman, Civil Defense Committee, Maine Medical Association.

fied by FCDA Region I Headquarters that Maine now had seven (7) *primary thermo-nuclear target areas* within the state which included the State Capitol, Portland and five military bases. He was further advised that: *"It should be assumed that 20 megaton bombs would*

be used against each of these seven primary target areas in event of an enemy attack."

A medium sized hydrogen bomb (20 megatons) is equal to 20 million tons of TNT which would require a volume of TNT 600 feet wide, 600 feet high and



1200 feet long. The 20 megaton thermo-nuclear bomb multiplies the explosive power of the "nominal" atomic bomb by 1,000 and of the conventional high explosive bomb by 1 million. Such a medium sized hydrogen bomb exploded at ground level would produce a crater 1.3 miles and a fireball nearly 4 miles in diameter. The blast would cause collapse of reinforced concrete buildings with 10 inch walls and 6 inch floors in a radius of four miles, severe structural damage to steel frame buildings out to about 12 miles, and severe damage to houses out to 14 miles and light damage out to 20 miles from ground zero.

The temperature of the fireball reaches a maximum of several thousand degrees several seconds after the detonation of a 20 megaton bomb at ground level and is sustained for a much longer time than was true for 20 kiloton bombs. As a consequence, the thermal burning lasts for several seconds and will produce third degree burns on bare skin of persons out in the open on a clear day in a radius of 15 miles. For air bursts, almost twice as much energy will appear in the fireball as in the case of surface bursts, and third degree burns would appear out to 18 or 20 miles. Such a degree of heat would cause the burning of wooden structures at a distance of 15 miles, and there will be spontaneous fire explosions in all inflammable structures out to 9 or 10 miles. The tremendous blast, the heat, the cavation and the viscous fireball would prevent survival within the three mile limit of ground zero. A person in a surface flush-type of shelter covered by one foot of concrete and two feet of dirt would have about a 50% chance of survival at five miles and about a 90% chance at 7 to 8 miles. Men in an ordinary type suburban building would have about a 50% survival at a distance of 9 to 10 miles and a 90% chance at a distance beyond 15 miles.

The survival of men in the open will be largely dependent upon the heat and the atmospheric conditions. On a very cloudy day more will survive, but if it is a very clear day, the heat will be lethal at a much greater distance from the center. In an area of about 600 square miles around the epicenter few unshielded humans will survive.

Direct radiation will not be a problem with the 20 megaton type thermo-nuclear weapon as the blast and heat will be lethal for a much greater distance than the immediate gamma radiation and will travel out from ground zero. On the other hand, the fall-out will be a great hazard, especially from the ground bursts, and will be directly proportional to the size of the bomb. Here in Maine the radioactive dust and debris and unfissioned residue will be swept up 30 or 40 miles into the stratosphere and then gradually settle out as it is carried down wind, and this fall-out during the greater portion of the year will be within a distance of 45 degrees north to 45 degrees south of due east and may extend to a distance of 250 to 300 miles from the target.

Figure I is a map of Maine showing the target areas and the areas of destruction that would result from the detonation of a 20 megaton bomb over each one. The zone lines are five miles apart and divide the area into a, b, c, and d zones.

Table I shows what would happen to the medical population and installations in each one of our seven thermo-nuclear target areas.

Table II shows the percentage of loss that would result.

The revised State Civil Defense plan will call for the evacuation of all persons within the A and B zones of target areas. This evacuation will take place over specified roads into adjacent designated sections of Maine


TABLE I
20 MEGATON BOMB TARGET AREA DATA

Target	Population in Zones A & B	Doctors in Target Zones	Hospital Beds in Target Area		
			General	Mental	U. S. Government
Kittery	21,513	10	22		182
Portland	162,819	238	1015		
Brunswick	46,631	43	197		75
Augusta	49,951	51	149	1800	869
Bangor	79,819	86	426	1208	50
Presque Isle	18,569	18	53		
Limestone	31,903	22	90		100
TOTAL	411,232	468	1952	3008	1276

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LEDERLE LABORATORIES DIVISION, AMERICAN CYANAMID COMPANY, PEARL RIVER, NEW YORK

TABLE II

<i>Subject Matter</i>	<i>State Total Before Bombing</i>	<i>Destroyed By Bombing</i>	<i>Loss in %</i>
Doctors	987	468	47
General Hospital Beds (Civilian)	3170	1852	61.5
U. S. Government Hospitals	1276	ALL	100
State TB Hospital	407	120	30
State Mental Hospitals	4508	3008	66

beyond the C and D zones. Persons in the C and D zones will not be evacuated but will be expected to utilize all available shelter.

Hospitals located in the A and B zones of each target area will prepare evacuation plans and will be evacuated along with all other persons in these first two zones. The administrative staffs and selected medical personnel assigned to the hospitals will be evacuated along with patients. Evacuation sites outside the 20 mile radius will need to be selected. As a matter of fact, the hospital administrators from the target cities have already met at Augusta with the State Civil Defense Administrator and his staff, and work has begun on this evacuation of hospitals from target areas. The professional staffs

should give their fullest cooperation to this undertaking.

It becomes obvious that the medical care and hospital Civil Defense Disaster plans must of necessity be organized in towns and hospitals outside the seven target areas in the state. For the most part the expansion will be to the west and north of the target areas and along the coast of Maine northeast from Bath. Fallout may well make the coastal areas uninhabitable. As a matter of fact, every hospital outside the target areas will also need an evacuation plan as no person can predict with absolute certainty where the fall-out from thermo-nuclear weapons used on targets within or without the State will go on any given day.

Professional Education

The National Foundation for Infantile Paralysis announces that March 1 is the deadline this calendar year for submitting applications to the Foundation for post-doctoral fellowships. Applications submitted before that date will be considered by the appropriate National Foundation Fellowship Committee in May.

Postdoctoral fellowships are available (a) in Rehabilitation, either the concept and basic techniques applied to specialized fields in medicine, or for preparation in the specialty of Physical Medicine and Rehabilitation; (b) Psychiatry; (c) in Orthopedics; (d) in the Management of Poliomyelitis; (e) in Preventive Medicine; (f) for postdoctoral training in research and/or academic medicine.

In addition to a stipend which varies from \$3,600 to \$6,000 annually according to the individual needs and marital status of the applicant, the National

Foundation arranges for compensation to the institution according to the program undertaken. For a full academic program, tuition and fees are paid; for other programs, a sum not to exceed \$1,250.00 per year including tuition.

Partial fellowships are available for qualified veterans to supplement G. I. educational benefits.

The next deadline for applications will be September 1 for consideration in May.

For further information write:
Division of Professional Education
National Foundation for Infantile Paralysis
120 Broadway
New York 5, New York
(After March 1, 1957, write to the new address)
301 East 42nd Street
New York, New York

Birth In 1956 Will Be 4.2 Million, A New High

The National Office of Vital Statistics, in USPHS, estimates that the country's birth total this year will approximate 4,202,000. This would set an all-time record for numbers. Previous mark was the 4,091,000 of last year. If prediction for 1956 is fulfilled, the birth rate would be 25.1 per 1,000 population — highest on

record except for the 26.6 in 1947 and the 25.3 in 1954. This year's increase over 1955 is attributed both to a rise in the number of couples having their first child and to the rise in subsequent births. For the past several years, USPHS has noted steady increases in birth rates of third, fourth and fifth children in families.

Fat Upper Arms Confuse Blood Pressure Meter

A more accurate reading of blood pressure in obese persons can be obtained by measuring the pressure below the elbow rather than above, as usually done, New York doctors said recently.

They said that falsely high blood pressure readings may be obtained in people with large flabby upper arms. The reason for this is not entirely clear, but it may be due to the larger circumference and the compression of flabby tissue in the upper arms, they said in the November 3, 1956 issue of the JAMA.

In experiments with non-obese persons, one arm was loosely wrapped with cotton which was compressed by the blood pressure cuff. The reading in the wrapped arm was much higher than in the unwrapped arm. However, when less-compressible gauze was used, there

was only a slight difference in the readings in the two arms.

The authors also found that persons with large — but muscular — upper arms did not have falsely high blood pressure readings, apparently because the muscular tissue is not compressible.

In obese persons with flabby upper arms, the doctors measured the blood pressure internally by inserting a needle into an artery. They then compared that reading with readings obtained in the forearm and the upper arm. The arterial pressure was similar to that of the forearm.

The authors are Dr. Kenneth W. Trout, Hillsdale, N. Y., and Drs. Charles A. Bertrand and M. Henry Williams, Valhalla, N. Y.

A Respiratory Vaccine

The Army announces the successful trial of a new respiratory disease vaccine which has reduced the incidence of hospitalized cases of respiratory disease among recruits by more than 80%. The new vaccine, which

reaches its maximum effectiveness within a week after administration, was developed and prepared at the Walter Reed Army Institute of Research in Washington.

Consultant Says Second Cousins May Marry

A medical consultant recently contradicted the notion that all cousins who marry will have defective children.

In a query to the Journal of the American Medical Association, a physician asked if it would be wise for a girl to marry her second cousin — the grandson of her father's brother. The unnamed consultant said

that it would be all right — if the ancestry on both sides for three generations was sound physically, intellectually and emotionally.

The danger to any offspring of a marriage between cousins of sound ancestry would not be much greater than if the parents were unrelated, he said.

On The Realistic Side

In defending the AMA's lobbying activities on Capitol Hill, Dr. Allman emphasized the fact that of 26 health bills enacted in 1955-56, the Association took no stand on or supported 23 of them, opposing only three. What he neglected to mention, in support of his point that doctors should keep alert to medico-political trends and developments, was that the passage of not one single health bill could be attributed to the initiative or militant backing of the AMA.

Where the AMA mounted an initiative — as in striving diligently for Bricker resolution and enactment of tax-deferred pension plans for self-employed professionals — no Congressional action was taken.

Where it *did* take a militant stand, but in *opposition* — for example, against social security liberalization and military commissioning of doctors of osteopathy — the legislation went through with relatively little difficulty.

Christmas Gift

The Oregon Saw Chain Corporation of Portland, Oregon, has sent substantial Christmas gifts to four of the country's "worthy children's hospitals."

The Children's Hospital at the Maine Medical Center, Portland, was the only one in the eastern half of the country to be included.



ANSWERING QUESTIONS



Why Blue Shield Must Keep On Growing

Ever since the birth of the "Blues," the big news has been their astounding rate of growth. Blue Cross and Blue Shield have "hit the jackpot" in public acceptance, the former now well past the 50 million mark, and the latter expected to reach 40 million by the end of 1957.

Occasionally one hears the suggestion that Blue Shield attempt to "stabilize" its enrollment, and relax its efforts to cover an ever larger cross section of the population. But the demand for prepaid medical care is now almost universal; and those who have it are asking for broader coverage and better contracts.

Not only does Blue Shield's momentum of growth permit no turning back, but it has grown so big that the public interest in Blue Shield has made it a major item in America's program for social progress. The continued growth of Blue Shield is essential to the best interests of both medicine and the public.

Why essential?

First, because Blue Shield is a major factor in medicine's economy. Whereas installment buying creates a debt and mortgages the future, medical prepayment creates a credit for the patient, and protects his future.

Again, Blue Shield's growth safeguards its actuarial

base of operations. As risks are spread ever more widely, the community and the doctor gain a surer protection against fluctuations affecting the subscription rates or payments to physicians.

A third benefit of Blue Shield growth is the opportunity to reduce operating costs per person enrolled. This helps the plan to broaden its services or to raise its payments to doctors — or both.

Fourthly, the greater the number of his patients covered by prepayment, the fewer for whom the doctor has a collection problem, and the lighter his load of free or part-pay work.

Medicine's most significant benefit from the growth of Blue Shield is the dominant influence of the medically guided Blue Shield Plans on the shape and destiny of the voluntary health insurance movement as a whole. Were it not for Blue Shield, the medical profession would have no effective control over the basic economy of private practice.

Blue Shield is big because it has a big job to do for the doctor and his patient. But the size of Blue Shield is only a reflection of the vision and boldness that the American doctor has brought to bear on this job.



DEAN H. FISHER, M.D.
COMMISSIONER

State of Maine

Department of Health and Welfare

Division Of Maternal And Child Health

ELLA LANGER, M.D., Director

Major changes in the number of live births in Maine over a 25-year period and the dramatic decline in maternal mortality for the corresponding period, together with data on infant and neonatal mortality rates are presented in graphic form for this issue of the Journal.

The information, references and discussion contained in this brief presentation should be considered only as a condensed version of the data prepared by the Division of Maternal and Child Health which also includes the Division of Services for Crippled Children, both of which programs are administered by Dr. Langer.

The figures for this brief report were provided by the State Registrar of Vital Statistics.

CHART I shows a 25 year survey in regard to the number of live births in Maine which describes a trend similar to the national trend, i.e. a continuous increase in the number of births. In 1954 there were nearly 23,000 births compared to over 16,000 in 1930, which means an increase by half of the number. A sharp upward trend beginning in 1945, immediately after the war, reached a peak in 1947 and another peak in 1955.

CHART II shows a dramatic decline in maternal mortality rates over a 25 year period from 7.9 per 1,000 live births to less than one per 1,000 in 1948, and has stayed under one per thousand since then. This is less than a tenth of the rate of 1930.

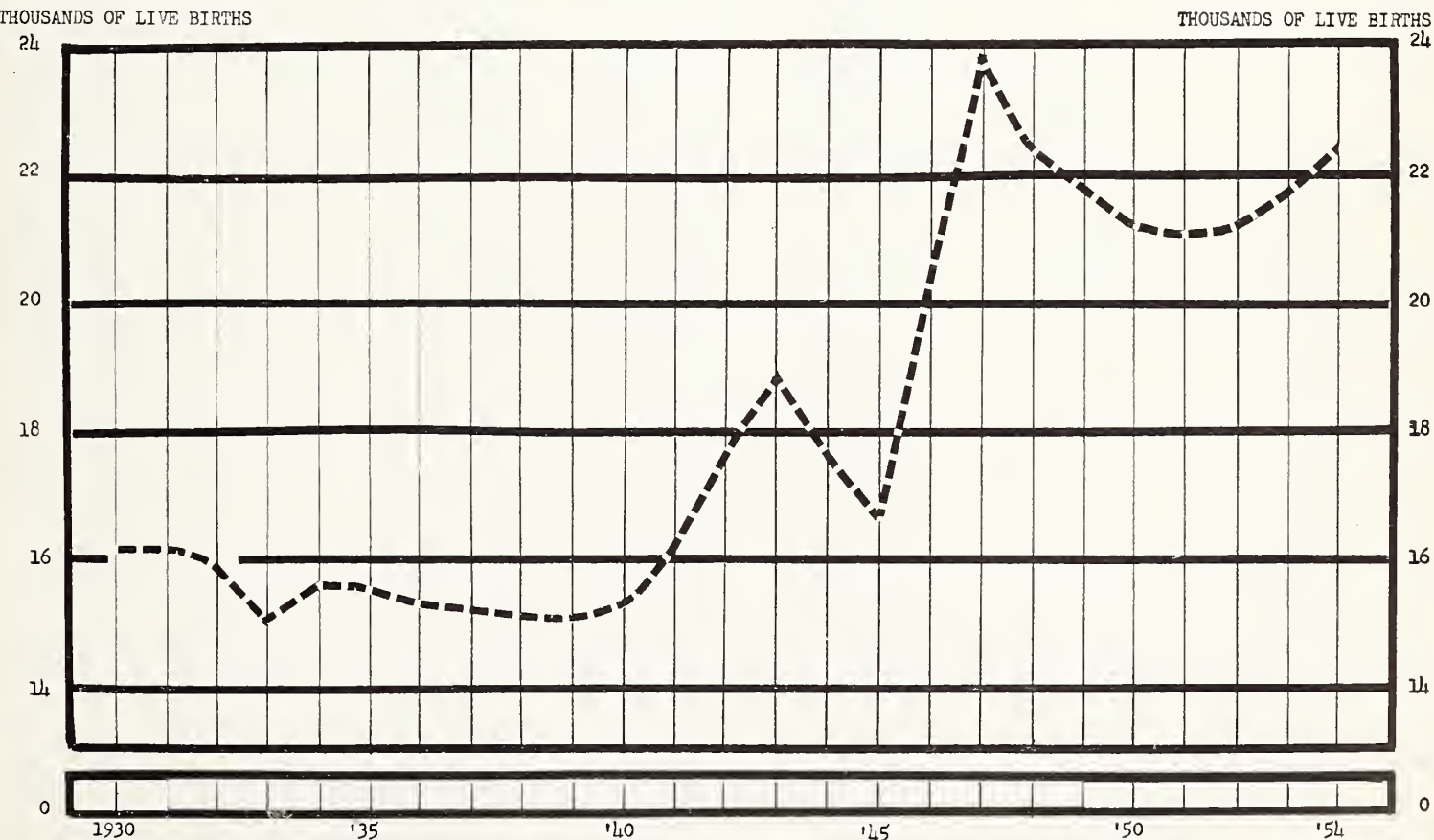


CHART I: NUMBER OF LIVE BIRTHS IN MAINE, 1930-1954

RATE PER 1,000 LIVE BIRTHS

RATE PER 1,000 LIVE BIRTHS

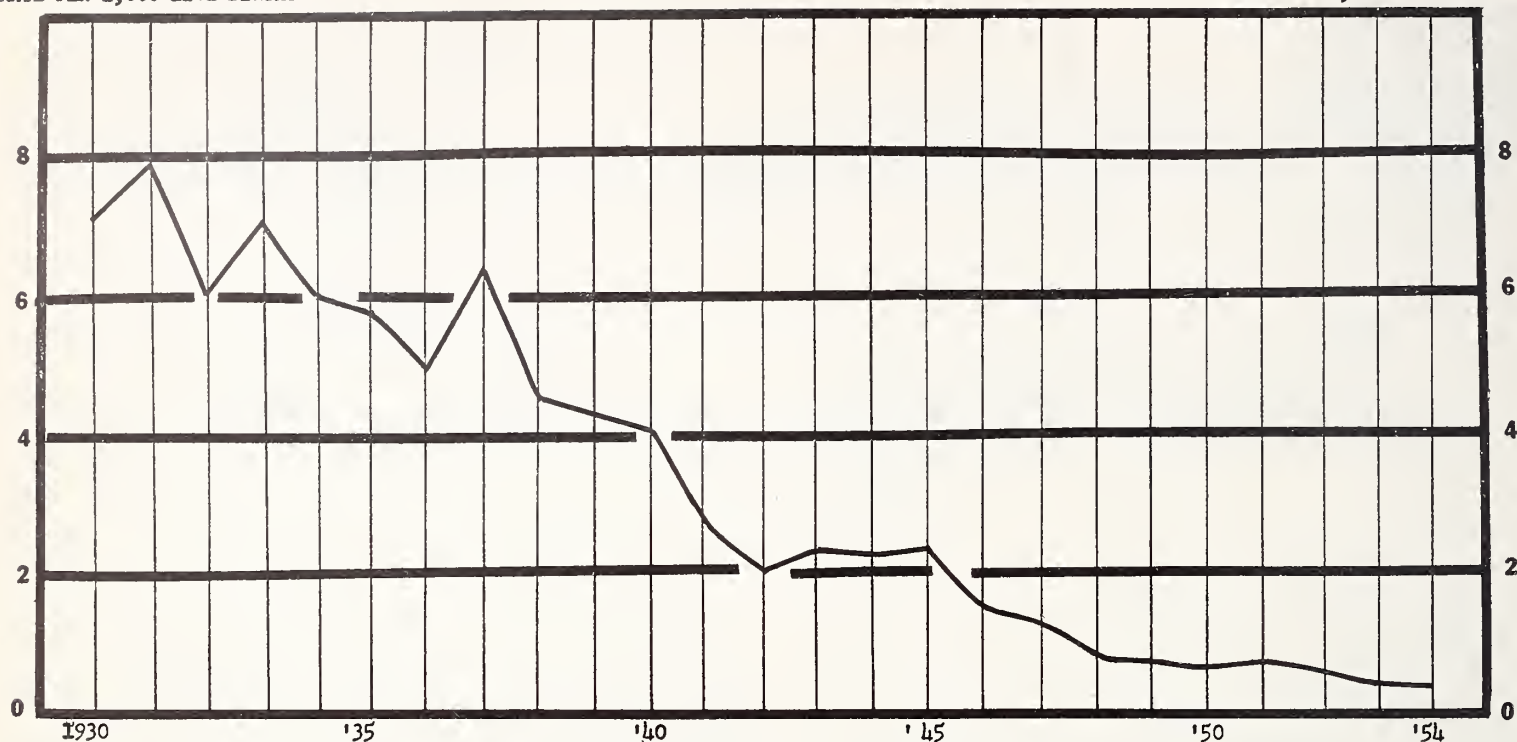


CHART II: MATERNAL MORTALITY RATES PER 1,000 LIVE BIRTHS, MAINE 1930-1954

CHART III. Infant and neonatal mortality rates per 1,000 live births show a decline by approximately $\frac{2}{3}$ for the first year of life. However, broken down into neonatal deaths, i.e. first month of life, and into a group from one month to one year of age, the trend, similar to the national trend, is demonstrated by a decline in the neonatal group under one month to about less than half, whereas there is a decline of more than $\frac{2}{3}$ in the overall number from birth to 12 months of age. This shows very clearly that improved infant care, including preventive measures such as immunizations, better nutrition, etc. result in an impressive decline of infant deaths, especially in the age group one month to 12 months of age. The decline from 1930 to 1954 was almost 80%.

CHART IV. Infant deaths for 1955 broken down in 4 age groups, i.e. those under one day old, those one to six days old, seven to twenty-seven days old, and twenty-eight days to one year old. The number of deaths during the first month is more than twice as large as that for the remaining 11 months, and the number of deaths under one day is the largest single group, comprising more than $\frac{1}{3}$ of the total infant deaths.

FETAL DEATHS (1955)

For the first time, fetal deaths were reported on Fetal Death Certificates for 1955 as recommended by the World Health Organization. This resulted in an increase of reported cases from 364 to 647 — nearly double that of 1954.

Premature death. No figures are available at the present time for premature deaths during 1955.

Infant death rates for Maine are lower than national figures, and maternal death rates are also slightly lower

than the national figures. The Maine infant death rate for 1955 was 24.4.

DISCUSSION

These figures show the need for improved services for mothers and infants during the prenatal period, delivery and post-natal period. It is hoped that the trend toward hospital deliveries — which has shown a substantial increase over the past years — reaching 95.5% in 1954, will continue. It is hoped, too, that a maternal mortality study will soon be carried out in Maine as has been suggested by the Committee on Maternal and Child Welfare of the Maine Medical Association. The Division of Maternal and Child Health will continue to supply physicians and hospitals with pamphlets and booklets on Prenatal Care and Infant Care. Premature births have been reported to the Division of Maternal and Child Health by physicians and hospitals for the last 3 years and will serve as the basis for the development of a premature program for the state.

It is planned to follow up with a more detailed report and also to report on statistics gathered by The State Crippled Children's Services with discussion of these figures.

VITAL STATISTICS OF MAINE

Maine's Registrar of Vital Statistics, Edson K. Labrack, reports that live births continued at a high level in 1955 with 22,753 children being born alive to Maine residents. This represents an increase of 314, or about 1.5 per cent over the number of live births in 1954. The number of live births in hospitals and licensed maternity homes in 1955 was 22,002, or 96.7 per cent of all live births. This represents an increase of 2.2 per cent

Rate per 1,000 live births
80

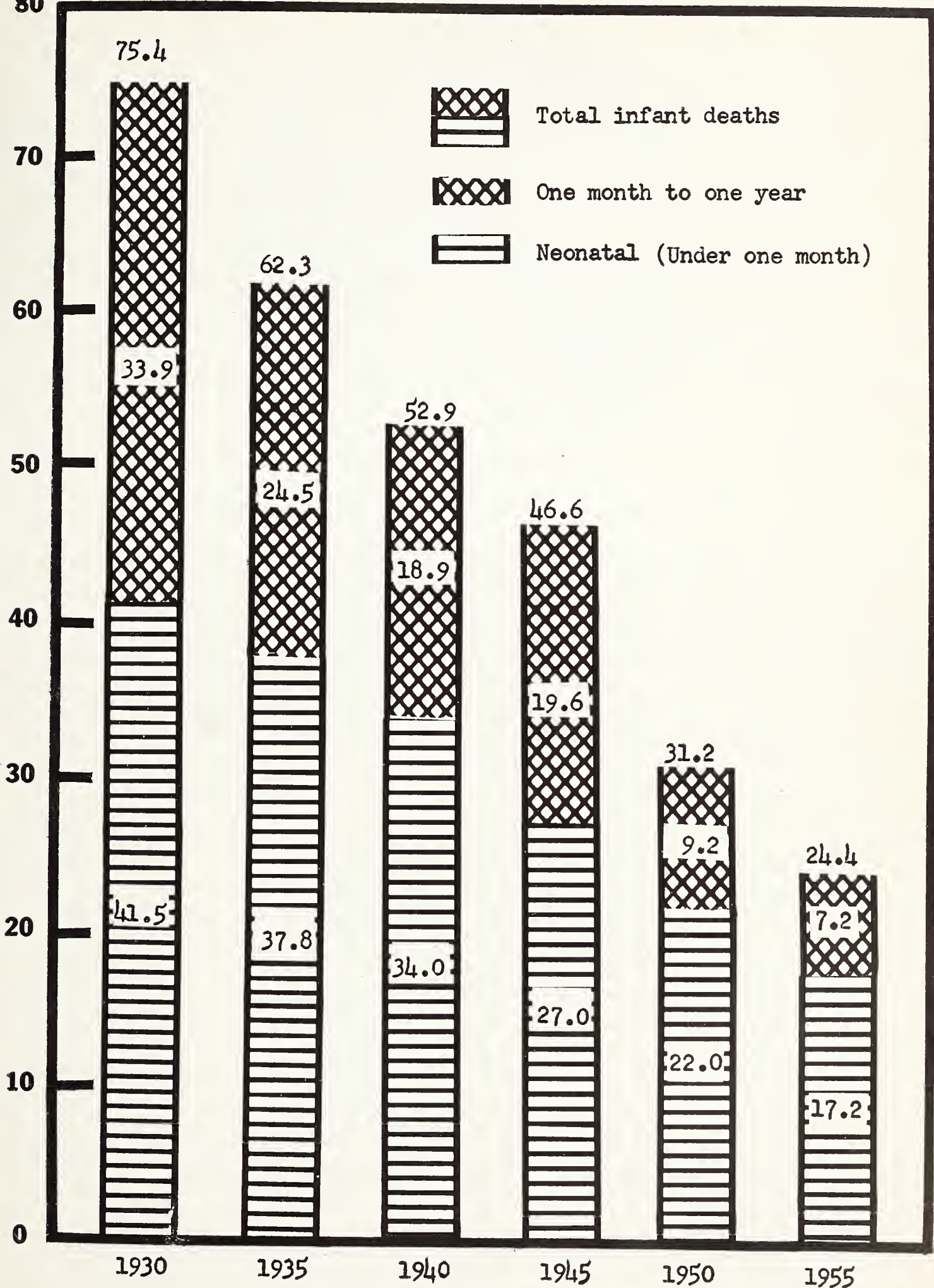


CHART III: NUMBER OF INFANT AND NUMBER OF NEONATAL DEATHS PER 1,000 LIVE BIRTHS IN MAINE, FOR SELECTED YEARS, 1930-1955

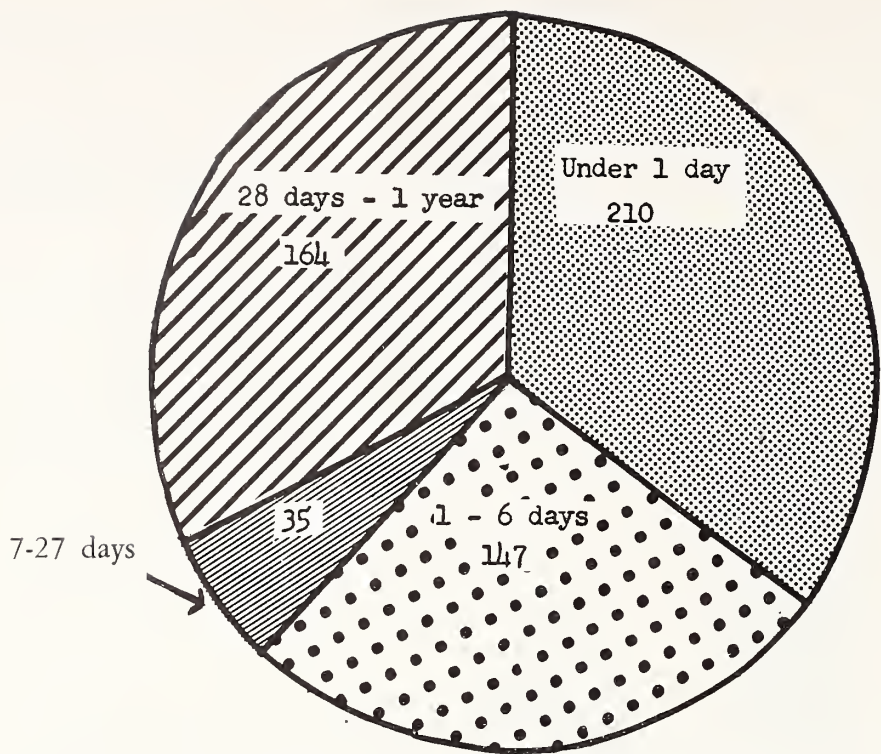


CHART IV: NUMBER OF INFANT DEATHS BY AGE, MAINE, 1955
TOTAL — 556

over the 21,530 born in hospitals and maternity homes in 1954.

Deaths among Maine residents numbered 10,140 in 1955, or 262 more than in 1954. The number of resident deaths was greater in 1955 than in any year since 1949.

TEN LEADING CAUSES OF DEATH

The following table shows the 10 leading causes of death in the state during the years 1954 and 1955.

1954		Cause of Death	1955	
Rank	Deaths		Deaths	Rank
1	4,052	Diseases of Heart	4,145	1
2	1,657	Malignant neoplasms	1,613	2
3	1,231	Vascular lesions of CNS	1,259	3
4	490	Accidents	518	4
5	312	Diseases of early infancy	327	5
6	233	General arteriosclerosis	270	6
7	220	Influenza and Pneumonia	249	7
8	151	Diabetes	171	8
9	132	Suicide	115	10
10	119	Congenital malformations	119	9

ACCIDENTAL DEATHS

Accidents ranked as the fourth leading cause of death in Maine in 1955, with 518, or 1 in every 20 deaths among Maine residents being attributed to accidental causes.

Motor-vehicle accidents were the leading cause of

accidental death, numbering 173 or one-third of all accidents.

Home accidents ranked as the second most important cause of accidental death and were only slightly behind motor-vehicle accidents, at 142 deaths.

Accidents on the farm, including farm home accidents, were responsible for the deaths of 46 Maine residents in 1955.

REPORTED CASES OF CERTAIN
COMMUNICABLE DISEASES

	1934-36	1944-46	1954-56
Chickenpox	4,077	4,627	6,272
Diphtheria	150	157	0
Dysentery, bacillary	5	1	22
Food poisoning	‡	70	0
German Measles	4,272	1,080	2,057
Hepatitis, infectious	‡	‡	941
Malaria	0	96	5
Measles	14,666	2,966	9,101
Meningococcal Infections	23	69	42
Mumps	7,377	5,484	1,619
Poliomyelitis	189	111	338
Rabies in Animals	24	0	0
Rheumatic Fever	‡	‡	39
Salmonellosis	‡	‡	32
Streptococcal nasopharyngitis	1,639	3,245	2,700
Trichinosis	62	8	2
Typhoid & Paratyphoid Fevers	257	63	21
Undulant	43	89	3
Whooping Cough	3,292	3,243	1,090

‡Not Reportable

The President's Page

To any one who has lived through the ominous events preceding World War II there will appear many points of similarity in the present world situation. After the slow testing of strength in Korea and Indochina, comes the more rapid slashing and feinting in the Middle East, and a terrible anxiety is beginning to torture the soul of humanity. "Peace in our time" is very remote and war seems imminent.

This time, our military forces are very alert and well prepared, and the words of General Gruenther, on relinquishing his European Command, are most reassuring. But if the military is well prepared and able to retaliate quickly and effectively to an aggressor it is not quite so with our civilian population which will have to bear the brunt of the damages and horrors of an atomic war.

Except in a few states our Civilian Defense program is inadequate and daydreaming. We doctors have an important part to play in Civil Defense, a part which we have thus far somewhat neglected. There is still time so let's awake and organize.

Here in Maine we have Dr. Charles Steele, Chairman of our Civil Defense Committee, who has worked very hard and ably, but who has not had the cooperation he should have had. Why not get going immediately, organize your County Societies, gear them for Civil Defense, and be ready for any disaster, whether in war or in peace. Dr. Steele would be only too glad to attend any County Medical Meeting and help in reorganizing our tottering Civil Defense program. I am sure it will be time and effort well spent.

ARMAND ALBERT, M.D.

President, Maine Medical Association

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and
SECRETARIES
of
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Wirt L. Davis, M.D.

Lewiston

President
Androscoggin County
Medical Society



Donald L. Anderson, M.D.

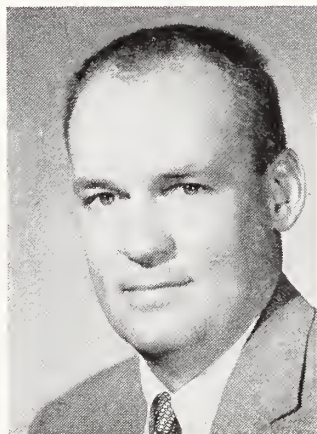
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Androscoggin County
Medical Society

Edward K. Morse, M.D.

Rockland

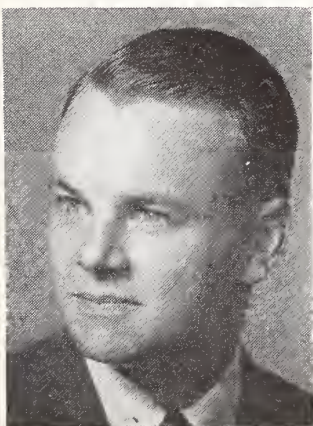
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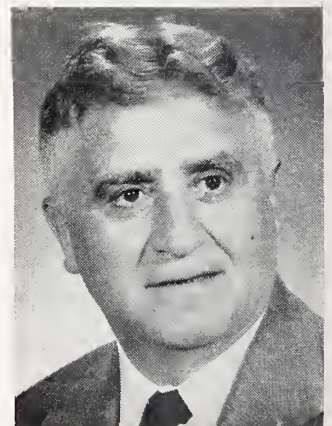
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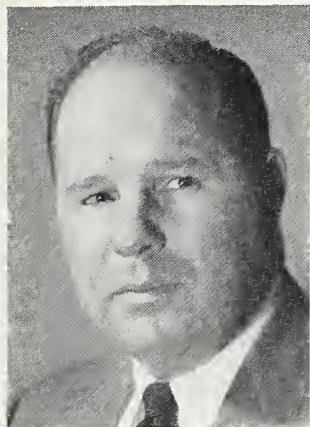
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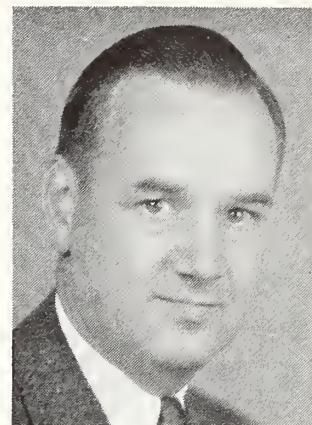
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Ernest W. Stein, M.D.

Pittsfield

President
Waldo County
Medical Society



Edwin B. Johnston, M.D.

St. Stephen, N. B.

Immediate Past
President
Washington County
Medical Society

Karl V. Larson, M.D.

East Machias

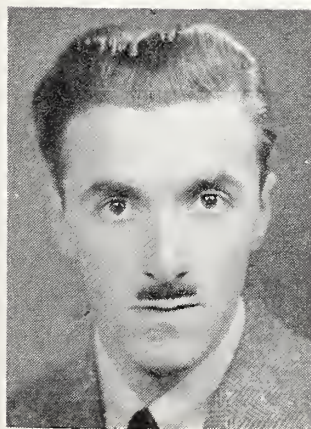
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Washington County
Medical Society



Louis C. Lesieur, M.D.

Saco

President
York County
Medical Society



Charles W. Kinghorn, M.D.

Kittery

Secretary-Treasurer
York County
Medical Society



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Secretary, Donald L. Anderson, M.D., Lewiston

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Secretary, Clyde I. Swett, M.D., Island Falls

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Secretary, Stanley E. Herrick, M.D., Portland

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Secretary, Paul E. Floyd, M.D., Farmington

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Secretary, Arthur M. Joost, Jr., M.D., Bucksport

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President, Hazen C. Mitchell, M.D., Calais
Secretary, Karl V. Larson, M.D., East Machias

YORK

President, Louis C. Lesieur, M.D., Saco
Secretary, C. W. Kinghorn, M.D., Kittery

County Society Notes

FRANKLIN

December 17, 1956

The following officers were elected for 1957 at the December meeting of the Franklin County Medical Society:

President, Hays G. Bowne, M.D., Farmington
Vice-President, Wallace H. Duffy, M.D., Farmington
Secretary-Treasurer, Paul E. Floyd, M.D., Farmington
Censors: James W. Reed, M.D., Farmington (1 year),
Wallace H. Duffy, M.D., (2 years), Maynard B.
Colley, M.D., Wilton (3 years).
Delegate to the Maine Medical Association House of
Delegates, Philip B. Chase, M.D., Farmington. Alternates, Paul E. Floyd, M.D.

Paul E. Floyd, M.D.
Secretary

HANCOCK

November 14, 1956

The November meeting of the Hancock County Medical Society was held at the Hancock House, Ellsworth, Maine. There were sixteen members and three guests present. John T. Connell, M.D., President of the Society, presided at the meeting. Dwight Cameron, M.D., of Northeast Harbor, a member of the State Association's Health Insurance Committee, presented a report on the last meeting of the committee.

The remainder of the meeting was devoted to a panel discussion of Pulmonary Function, by George W. Wood, III, M.D., Hadley Parrot, M.D., and Charles D. McEvoy, Jr., M.D., all of Bangor. They demonstrated some of the pulmonary function tests which they use and discussed the value and limitations of these tests in various diseases of altered respiratory function. A question and answer period followed.

December 12, 1956

There were fourteen members and one guest present at the December meeting of the Hancock County Medical Society, which was held at the Hancock House, Ellsworth, Maine. The meeting was opened by the President, John T. Connell, M.D., of Northeast Harbor.

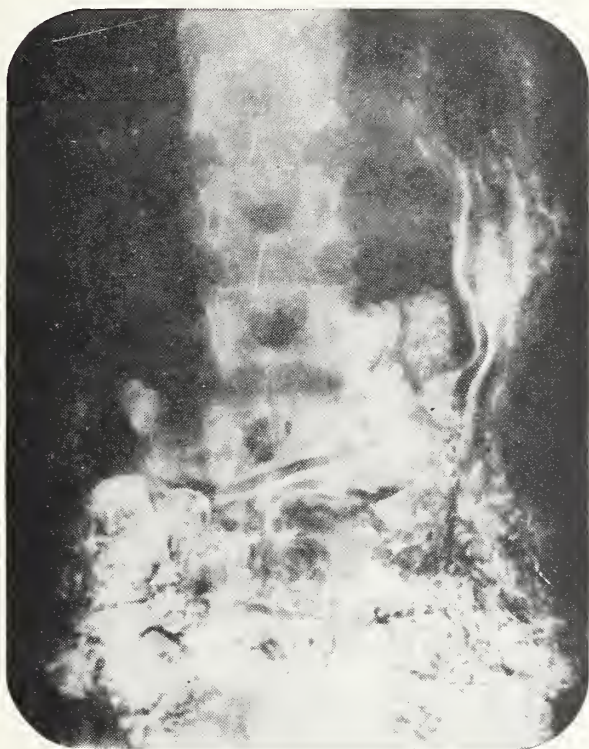
Raymond E. Weymouth, M.D., of Bar Harbor, Councilor for the Fifth District, presented a report on the last meeting of the Council of the Maine Medical Association. A motion was passed that the society favors contributions to the Doctors' Medicine Fund. The society also passed a motion favoring Poland Spring for the 1958 annual session of the Maine Medical Association.

The following officers were elected for 1957:

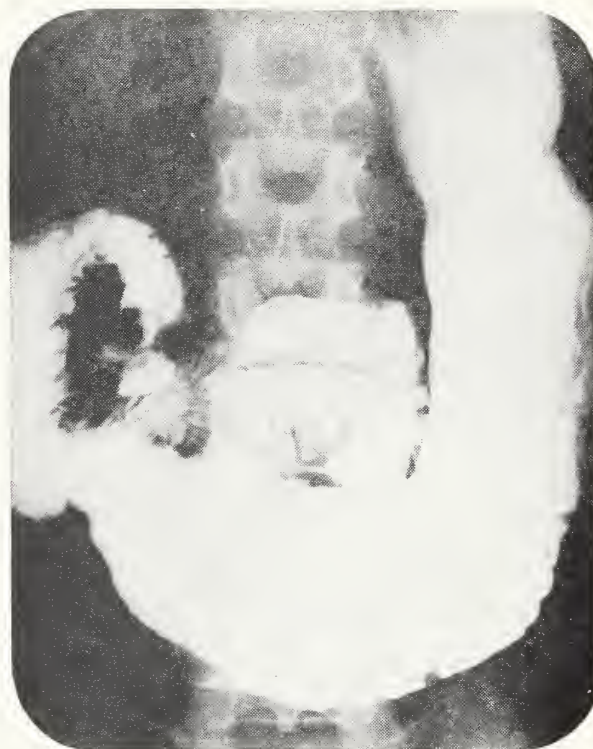
President, Robert F. Russell, M.D., Penobscot
Vice-President, William C. Luther, M.D., West Sullivan
Secretary-Treasurer, Arthur M. Joost, Jr., M.D., Bucksport
Censor, Llewellyn W. Cooper, M.D., Bar Harbor
Delegates to the Maine Medical Association House of
Delegates; James H. Crowe, M.D., Ellsworth and Marcus A. Torrey, M.D., Ellsworth. Alternates, Philip L. Gray, M.D., Blue Hill and Arthur M. Joost, Jr., M.D.
Linus J. Stitham, M.D., of Dover-Foxcroft, Chairman of the Maine Medical Association's Health Insurance Committee, spoke on Blue Shield. He outlined the basic changes in sev-

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*Roentgenograms courtesy of I. Richard Schwartz, M.D., Kings County Gastrointestinal Clinic, Brooklyn, N. Y.

SEARLE

eral proposed new plans for Blue Shield which will be voted on at the April meeting of the House of Delegates and answered many questions about the proposed plans and about the Blue Shield plan in general.

Arthur M. Joost, Jr., M.D.
Secretary

YORK

November 14, 1956

The November meeting of the York County Medical Society was held at Valle's Steak House in Kittery, Maine.

A social hour was followed by dinner.

George Dodge, M.D., of Portsmouth, New Hampshire gave a very interesting talk on Pathogenesis of Atherosclerosis. A question period followed.

It was voted to hold the annual meeting January 9 at Kennebunk. The committee appointed by the chair consisted of Drs. James H. MacDonald and Melvin Bacon. It was voted to approve the Health Congress to be held by the Wells group. Dr. Bacon was appointed to assist them.

It was voted that the nominating committee be appointed by the chair.

There were eleven members and five guests present.

Members: Drs. Melvin Bacon, S. Dunton Drummond, Robert F. Ficker, Alvin A. Hoffman, Charles W. Kinghorn, Joseph R. LaRochelle, Louis C. Lesieur, Marion A. K. Moulton, Carl E. Richards, Roger Robert, Robert D. Vachon.

Guests: Eugene E. O'Donnell, M.D., of Portland, District Councilor, Captain Backman, USN, George Dodge, M.D., A. J. Cultrera, and A. Scolten, M.D.

C. W. KINGHORN, M.D.
Secretary

New Members

ANDROSCOGGIN

Frederick B. Lidstone, M.D., 117 Goff Street, Auburn
Albert Shems, M.D., 487 Main Street, Lewiston
Gerard Morin, M.D., 460 Main Street, Lewiston

AROOSTOOK

Marguerite Dunham, M.D., Caribou
Eli A. Etscovitz, M.D., Cary Memorial Hospital, Caribou
Samuel Rideout, M.D., Fort Fairfield

CUMBERLAND

William J. Tetreault, M.D., 131 Chadwick Street, Portland

KENNEBEC

Earle M. Davis, M.D., 34 Gilman Street, Waterville
H. Richard Hornberger, M.D., Waterville
Edward M. Southern, M.D., 2 School Street, Waterville

Necrology

Manning C. Moulton, M.D. — 1893-1956

Manning Cole Moulton, M.D., 63, died at his home in Bangor, Maine on December 5, 1956. A native of Portland, Maine he was widely known as an Ophthalmologist.

He was born March 26, 1893, the son of Dr. Willis B. and Estelle C. Moulton. He was graduated from Portland schools, Bowdoin College and from Bowdoin Medical School in 1918. He interned at the Maine General Hospital, Portland, did graduate study in ophthalmology at Tulane University, and served at the Massachusetts Eye and Ear Infirmary. He was a lieutenant in the Naval Reserve medical branch in World War I.



Dr. Moulton had practiced in Bangor since 1924. A member

of the consulting staff of the Eastern Maine General Hospital, he also served as ophthalmological surgeon for the Bangor and Aroostook Railroad. Dr. Moulton was a member of the American, Maine and Penobscot County Medical Associations and the Bangor Medical Club.

He was a member of St. Andrews Lodge AF and AM, St. Johns Commandery, the Red Cross of Constantine, Anah Shrine Temple, the Bangor Rotary Club and the Penobscot Valley Country Club. He had formerly served on the Bangor City Council and Water Board, and as a trustee for the Bangor Public Library, the Home for Aged Women and the Good Samaritan Home.

Dr. Moulton is survived by his widow, Ina N., two daughters, Mrs. Virginia Emery, Bangor, and Mrs. Margaret McKee, Camden; two sons, Robert M., Baldwin, N. Y. and Gardiner Moulton, M.D., Bangor; two brothers, Albert W. Moulton Sr., M.D., and Dr. Bryant Moulton, both of Portland; one sister, Mrs. Arch H. Morrell, Augusta; several nieces and nephews and 17 grandchildren.

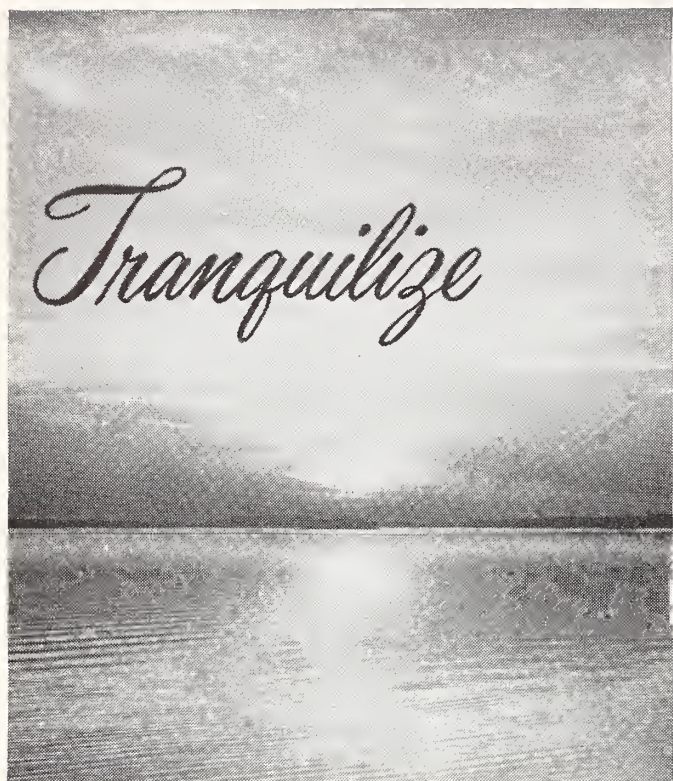
Tuberculosis Abstract

THE MORE FERTILE FIELDS FOR TB CASE FINDING are succinctly pointed out in articles on yields among hospital admissions (1) and in prisoners (2). Amazon and Gluckman found an incidence of 6.8 cases of *active* tuberculosis per one thousand male admissions to the Bronx Veterans Administration Hospital. More were in the older age group and in Negroes. These results are closely comparable to the average of 6 to 8 per thousand. All prisoners entering the Los Angeles County Jail were x-rayed and during the first year of the operation of the program, 6.3 cases of active disease per thousand were found. One third of these were unsuspected and the rest were known to some health organization.

These figures are in sharp contrast to the 0.9 per thousand yield of mass population surveys and the cost appreciably less in the jail and hospital groups.

To make the program truly contribute to the eradication of tuberculosis, adequate treatment must follow detection. What has Maine done?

-
1. Tuberculosis Case Finding in Hospital Admissions, Peter Amazon and E. C. Gluckman.
Diseases of the Chest, 30, 217, Aug. 1956.
 2. Los Angeles County Jail Chest Roentgenographic Screening Program. H. I. Meyers, G. Jacobson and F. W. Oechsli.
Am. Rev. of Tuberculosis and Pulmonary Diseases 74, 581, October 1956.



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Physicians Licensed to Practice Medicine and Surgery in the State of Maine

November 14, 1956

THROUGH EXAMINATION

Aldo Baldi, M.D., 1219 Rahway Ave., Westfield, N. J.
Elio Baldini, M.D., Maine Medical Center, Portland, Me.
Roman C. Cherny, M.D., Army Hospital, Ft. Eustis, Va.
Catherine Dromgoole, M.D., Carleton Ave., Central Islip, L. I., N. Y.

Michael Kraus, M.D., 6703 Oshkosh Ave., Chicago 31, Ill.
Michael M. P. Magaudo, M.D., Mercy Hospital, Portland, Me.
Paul H. Martin, M.D., 56 Bacon St., Biddeford, Me.
Mario Milazzo, M.D., 303 South Bayview Ave., Freeport, N. Y.
Jose S. Salas, M.D., The Waltham Hospital, Waltham, Mass.
Alphonse Telfeian, M.D., Albany Hospital, Albany, N. Y.

THROUGH RECIPROCITY

John Wellington Carrier, M.D., 53 Campus Ave., Lewiston, Me.
Sidney Chason, M.D., 126 Forest Ave., Bangor, Me.
J. Ramser Crawford, M.D., 35-12 161st St., Flushing, N. Y.
Robert H. Eddy, M.D., 44 Chestnut St., Cooperstown, N. Y.
David S. Hastings, M.D., 228 S. 12, Salina, Kan.
George F. Higgins, M.D., R No. 1, Box 42, Presque Isle, Me.
John P. Lanni, M.D., 171 Bailey St., Lawrence, Mass.
David L. Levy, M.D., Maine Medical Center, Portland, Me.
George A. Lyon, M.D., 4343 State Line, Kansas City 11, Mo.
Stuart D. Marsh, M.D., 15 Angell Terrace, So. Portland, Me.
Julius V. Molnar, M.D., Box: Sta. B. 7589, Raleigh, N. C.
Sumner E. Moulton, M.D., 696 Ocean Ave., Portland 3, Me.
Robert H. Pawle, M.D., 863 So. Race St., Denver, Colo.
Peter W. Rand, M.D., Shore Rd., Cape Elizabeth, Me.
John Hodgdon Shaw, M.D., Cape Neddick, Me.

Harvard University School of Public Health announces Public Health Scholarships

Scholarships for the Academic Year 1957-58 will be granted to individuals of high professional promise in awards ranging from part tuition to tuition plus a stipend, according to the qualifications and financial needs of the applicants. The Scholarship Funds are limited and are primarily intended for citizens of the United States. In general, preference will be given to applicants under 35 years of age.

Scholarship applicants must be eligible for admission to the School as a candidate for one of the following degrees: MASTER OF PUBLIC HEALTH, DOCTOR OF PUBLIC HEALTH, MASTER OF SCIENCE IN HYGIENE, MASTER OF INDUSTRIAL HEALTH.

A Catalogue of the School, Admission and Scholarship applications, and further information may be obtained by writing to the Secretary of Admissions and Scholarships, Harvard School of Public Health, 55 Shattuck Street, Boston 15, Massachusetts.

Scholarship applicants must return completed admission and scholarship applications to the Harvard School of Public Health by MARCH 1, 1957. Scholarship awards will be announced May 1, 1957. Under exceptional circumstances awards will be made at other times.

Institute On Handicapped Planned

February 13 and 14, a two-day institute on "Help For Handicapped Children" will be held at Roberts Union, Colby College, Waterville. Sponsored by the State Department of Health and Welfare in cooperation with state, local and regional affiliates of the Cerebral Palsy Association, and the Maine Association of Retarded Children, Inc., the Institute is planned to include the following items for consideration and discussion:

Cerebral Palsy, An Overview; Newer Trends in the Care and Treatment of Cerebral Palsied Children; Meeting the Special Needs of the Spastic; Community Responsibilities for Meeting the Needs of the Spastic; The Mentally Retarded Child in Maine; Meeting the Special Needs of Blind Children.

Persons eminent in the above fields will present the topics and a period of discussion following each of these will provide opportunity for full audience participation.

Morning sessions will take place from 9-12:30 each day; afternoon sessions, from 1:30-3:30.

The Institute is open to physicians, nurses, educators, health and welfare personnel throughout the State, as well as for all persons who are interested in help for the handicapped children in Maine.

Seventh International Cancer Congress

London, England, July, 1958

Sponsored by

The International Union Against Cancer

The Seventh International Cancer Congress will be held in London, England, July 6-12, 1958 under the Presidency of Sir Stanford Cade. Congress headquarters will be The Royal Festival Hall.

Special emphasis will be placed on Hormones and Cancer, Chemotherapy, Carcinogenesis and Cancer of the Lung.

Proffered papers will only be considered if submitted with an accompanying abstract (not over 200 words) before October 1957 and if dealing with new and unpublished work.

The registration fee for the Congress will be L10 (ten pounds) or \$30 (thirty dollars) and the latest date for registration without late fee will be January 1, 1958.

Registration forms and a preliminary program will be available early in 1957 on application to

The Secretary General
Seventh International Cancer Congress
45 Lincoln's Inn Fields
London, W. C. 2, England

Department Of Health And Welfare

Services For Crippled Children

Orthopedic Clinics

PORTLAND — MAINE MEDICAL CENTER

9:00 a.m.: Jan. 14, Feb. 11, Mar. 11.

LEWISTON — CENTRAL MAINE GENERAL HOSPITAL

9:00 a.m.: Jan. 18, Feb. 8, Mar. 15.

RUMFORD — COMMUNITY HOSPITAL

1:30 p.m.: Mar. 20.

WATERVILLE — THAYER HOSPITAL

1:30 p.m.: Feb. 28.

ROCKLAND — KNOX COUNTY HOSPITAL

1:30 p.m.: Feb. 21.

MACHIAS — NORMAL SCHOOL

1:30 p.m.: Jan. 16.

PRESQUE ISLE — NORTHERN MAINE SANATORIUM

9:00 a.m. and 12:30 p.m.: Jan. 8, Mar. 13.

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HOULTON — AROOSTOOK GENERAL HOSPITAL

9:00 a.m.: Mar. 12.

FORT KENT — PEOPLES BENEVOLENT HOSPITAL

10:00 a.m.: Jan. 9.

*BANGOR — EASTERN MAINE GENERAL HOSPITAL

1:00 p.m.: Jan. 24, Mar. 21.

CARDIAC CLINICS

PORTLAND — MAINE MEDICAL CENTER

9:00 a.m.: Every Friday (Holidays excepted).

BANGOR — EASTERN MAINE GENERAL HOSPITAL

9:00 a.m.: Jan. 11-25, Feb. 8-15, Mar. 8-22.

CLEFT PALATE EVALUATION CLINICS

PORTLAND — MAINE MEDICAL CENTER

10:00 a.m.: Feb. 12.

DIVISION OF MATERNAL AND CHILD HEALTH
PEDIATRIC CLINICS

*BANGOR — EASTERN MAINE GENERAL HOSPITAL

1:30 p.m.: Jan. 25, Feb. 15, Mar. 22.

*FORT KENT — PEOPLES BENEVOLENT HOSPITAL

10:00 a.m.: Mar. 20.

*PRESQUE ISLE — NORTHERN MAINE SANATORIUM

1:30 p.m.: Jan. 23.

*WATERVILLE — THAYER HOSPITAL

1:30 p.m.: Jan. 8, Feb. 5, Mar. 5.

*Several of the Pediatric Clinics, and also Bangor CC Clinics, will be two-session clinics.

ADDITIONAL CLINICS WILL BE ANNOUNCED LATER

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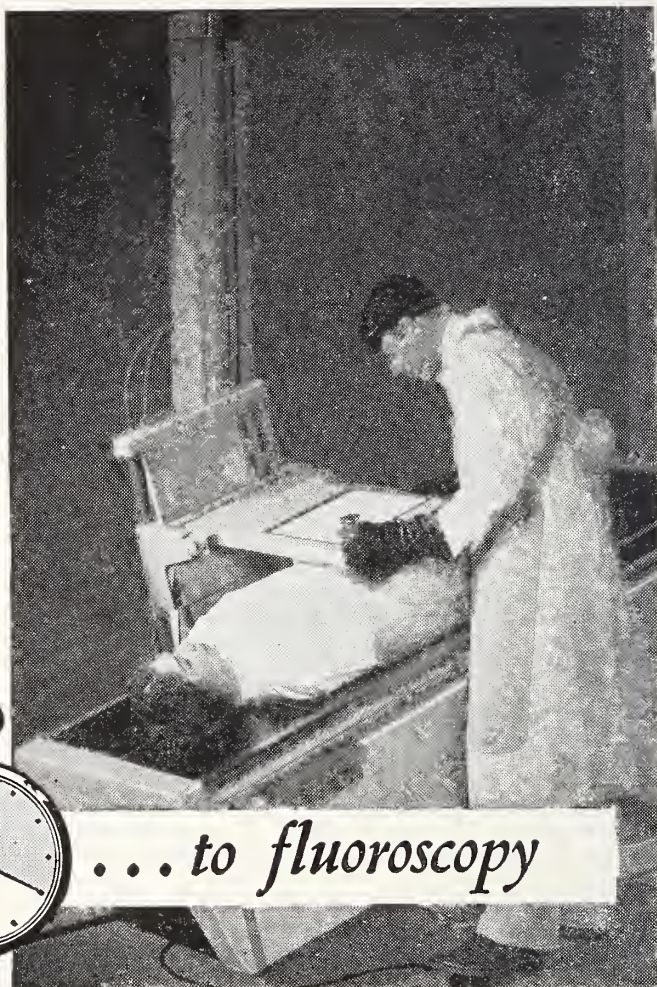
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The Journal of the Maine Medical Association

Volume Forty-Eight

Brunswick, Maine, February, 1957

Number 2

The Importance Of The Emotional Factor In Rhinoplastic Procedures

FREDERICK T. HILL, M.D.*

Indications for rhinoplastic operations fall into three general classifications: (1) conditions interfering with function which cannot be corrected by intranasal procedures, such as submucous resection, etc.; (2) deformity of the external nose resulting in unsightly asymmetry; and (3) exaggeration of an otherwise normal pattern such as marked aquilinity, elongated columella, etc. No surgical procedure in the field of Rhinology calls for more painstaking pre-operative appraisal than does the correction of nasal deformities. The results of Rhinoplasty can be most satisfactory or quite disappointing, depending not only on the extent of deformity and the technical proficiency of the surgeon, but upon the emotional status of the patient. Failure to give this due consideration at times has resulted in dissatisfaction on the part of the patient with what has been a perfectly good anatomical correction. This is more apt to be the case when the procedure has been done to correct an exaggeration of a racial pattern, or to alter a nasal con-

tour displeasing to the patient, although quite in keeping with the general facial configuration.

While duplication of the features of the Mona Lisa are not so much sought after these days, there burns in many a feminine bosom the desire to achieve a beauty far beyond what could be expected from the alteration of a nasal contour. The nose, cosmetically speaking, is only a part of the face and what may seem to the patient as an undesirable type of nose, may be in conformity with the general facial pattern. Attempts at alteration under such circumstances, at the behest of someone seeking to emulate one of the current bevy of Hollywood beauties generally will lead to disappointment. At times the dissatisfaction with a slight nasal asymmetry or aquilinity may be merely the expression of some hidden or unconscious conflict. Correction in such a case may provide only temporary satisfaction with subsequent substitution of some other symptom, real or fancied.

The following is an extreme example of how some mental conflict may be transferred to a complaint of a comparatively minor nature.

A young married woman was seen because of a

*Department of Otolaryngology, Thayer Hospital, Waterville, Maine.



FIG. 1a, Case No. 1 — Pre-operative



FIG. 1b, Case No. 1 — Post-operative

lateral displacement of the nasal bone due to an old fracture. The deformity was rather minimal, the septum was not deviated and there was no functional disability. Apparently she was much disturbed by the appearance of her nose and requested that it be corrected. A Joseph type of rhinoplasty restored the nose to a symmetrical mid-line position. While the result was very satisfactory to the patient, her mental problem was far from solved. Indeed the basic cause had never been discovered, nor had it been suspected, until a year later when she took her own life.

Experiences such as this tend to make one cautious about attempting to alter nasal conditions. This may deprive individuals of the beneficial effect of rhinoplasty, other than improvement in appearance, for, generally, asymmetry of any appreciable degree has an accompanying obstruction of nasal air currents indicating the advisability of correction. While function is a prime objective and relief of obstruction is of first consideration, not infrequently a well-performed submucous reaction may fail of its purpose due to lack of consideration of deformed alae of a twisted nasal arch. Next to an unrecognized allergic state, this probably is the most common cause of failure of the septum operation in relieving obstruction. Oftentimes, correction of an external deformity is a necessary adjunct to submucous resection.

The emotional factor generally is of lesser importance in the traumatic type of case, especially if of recent origin when repair is imperative. Here recovery from the injury with its fear of unsightly deformity makes acceptance of any improvement more readily acceptable.

The following case is cited as merely one example of what is rather common experience.

Mrs. R. S., age 51, was admitted to the hospital as an emergency case. She had sustained a severe compound fracture of the nasal and maxillary bones as a result of a fall. There was a deep lacerated wound extending from the left malar bone across the bridge of the nose to the right malar bone, involving both nasal bones and the septum. The entire nasal structure was hanging downward over the lip. Immediate treatment was limited to debridement, hemostasis and suturing of the wound, together with shock therapy. Later more definite surgery was carried out in two stages, providing adequate breathing space and restoring the external contour. While fairly satisfactory symmetry was obtained, it was not perfect as the entire right nasal bone had been destroyed in the accident. However, the patient has been quite content with the result.

Perhaps the emotional factor assumes the greatest importance when the deformity is such as to have a definite psychological effect upon the patient. This is especially so in the "teen-age" group. A profound inferiority complex may be developed in youngsters of this age by the thoughtless remarks and heartless comments of their schoolmates. As the young person reaches the age when he seeks employment, the deformity may have a distinctly unfavorable effect, influencing the type of job open to him. His inferiority complex, built up by years of association with his critical school-mates, may serve to keep him in a menial position and prevent him from attaining or even seeking advancement.



FIG. 2a, Case No. 2
Lateral view, Pre-operative



FIG. 2b, Case No. 2
Anterior view, Pre-operative



FIG. 2c, Case No. 2
Lateral view, Post-operative

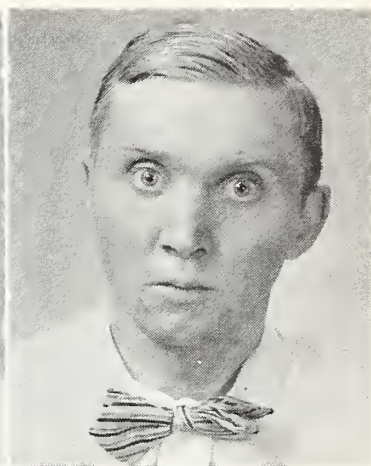


FIG. 2d, Case No. 2
Anterior view, Post-operative

The importance of this emotional factor is illustrated by the following two case reports.

S. T., age 17, was a very attractive girl with an exceptionally beautiful face, marred only by a severe saddleback deformity of the nose, resulting from a septal abscess sustained at the age of two. Soon she became known to her school-mates as "Snub-nose" and "Puggy." This had a very serious influence upon her entire personality. She was shy, easily embarrassed, and had a tendency to withdraw from her playmates, a marked inferiority complex. Her parents realized this and were anxious that something be done for her.

A rhinoplasty, using a bone graft from the pelvic brim, inserted through a vestibular incision, corrected the saddleback deformity and without any external scar.*

While the post-operative result has been satisfactory, the most gratifying thing has been the complete change in personality. Correction of the nasal deformity restored the facial beauty that was naturally hers and gave her the confidence in herself which she had so sadly lacked. No longer backward and shy she has taken her rightful place in her young world.

W. L., age 20, was one of the most pitiful cases I have ever encountered in this age group. As a result of a nasal fracture in early childhood he presented a most grotesque appearance. He had an exaggerated "corkscrew" type of nose together with almost complete nasal obstruction. His facial expression could only be described as "idiotic." Likewise the butt of jokes and horseplay at the hands of his contemporaries and of adults, he was considered "not bright." He had left school early

and had a menial job sweeping the floors of a factory.

Rhinoplasty was performed in two stages. The first procedure was a submucous resection of the septum, together with mobilization of the columella into a pocket in the midline, reinforced by a batten of cartilage. At the second stage the nasal bones were exposed through incisions in the sulcus and elevation of the periosteum over the nasal arch. The hump was removed with a Kazangian rongeur. The articulation of the nasal bones with the ascending maxillary processes was separated by saw and chisel; and with the frontal process, by chisel through a small external incision. This allowed manipulation into a symmetrical midline position. An external splint was fashioned by moulding compound and left in place for five days.

Similarly in this case the results have extended far beyond the improvement in facial contour. His doctor writes "he is a changed person, more extravertive and sociable. He works steadily in the mill and has quite a few more friends." When last seen by us he was indeed a different person. He was quite self-assured and confident. He even had a girl friend with him, on that occasion.

SUMMARY

These cases are cited to show the significance of the emotional status of the patient in determining the success or failure of rhinoplastic procedures. Except for traumatic cases of comparatively recent origin, the psychological factor assumes the greatest importance in the decision for or against rhinoplasty. Mere desire for alteration of facial contour, where there is little or no interference with function might well be viewed with caution. On the other hand attempts to correct abnormalities of function may fail if an accompanying external deformity is neglected. This importance of correction of gross deformities especially in the young age group and the effect upon the personality of the patient is illustrated by two case reports.

*Incidentally we have been able to shorten the operative time by using two surgical teams, one headed by Dr. J. F. Reynolds of the Surgical staff obtaining the graft from the pelvis, while at the same time I have prepared the site, fashioned the graft and placed it in the nose.

Early Diagnosis And Management Of The Ruptured Urethra

EARLE M. DAVIS*

Although rupturing the urethra is not a common injury, the serious potential sequelae which may occur at any time, make rapid and thorough management a necessity. The types of rupture with their various causes and the general principles of management will be discussed, and one illustrative case will be presented.

Ruptured urethra is commonly seen in the male as a complication of fractured pelvis and separation of the symphysis pubis. Here the rupture is located usually in the posterior urethra, or in that portion proximal to the triangular ligament; and is caused by the forceful displacement of the prostate and the prostatic urethra away from the fixed triangular ligament by the relatively dense puboprostatic ligaments. In this type of injury the blood and any extravasated urine remain in the perivesical and retropubic areas, limited from the perineal surface by the intact triangular ligament. In crushing injuries directly to the perineum, as in a straddling fall, the site of rupture usually lies anterior to the triangular ligament, and is most frequently in the bulbous portion of the urethra. The urethral canal, along with all other intervening perineal tissue, is crushed upward against the pubic arch, leaving the triangular ligament and Colle's fascia intact. In this injury extravasated urine and blood will be limited to the anterior abdominal wall in the suprapubic region, the penis, the scrotum and the anterior perineum.

The rupture may be partial or complete. A bony spicule from a fractured pubic ramus may penetrate the urethral wall, or the urethra may be lacerated through only a part of its circumference in a crushing injury, in which cases the portion of the urethral wall remaining intact maintains to some extent the continuity of the canal and facilitates management. If the rupture is complete, the amputated ends of the urethra may be widely separated and identified only with difficulty. The extensive maceration found in severe crushing injuries makes identification impossible and accurate approximation cannot be done.

The possibility of a rupture of the urethra should be considered in all cases of trauma to the perineum, especially in those in which there is a fracture of the pelvis or a separation of the symphysis pubis. Certainly in cases where there is bloody urethral discharge or urinary retention following perineal trauma, a ruptured

urethra must be ruled out without delay. It should be routine practice to catheterize all patients with severe trauma to the pelvis, and if there is ecchymosis of the genitalia, bloody urethral discharge, or any possibility of urinary retention, to leave the catheter in place for two or three days until evaluation is more complete. Usually, if there is indication for catheterization, there is indication for cystographic x-ray studies to rule out ruptured urinary bladder, and this is best done at the time of initial catheterization. It is wise to use a No. 16F Foley catheter with 5 cc. bag for the initial catheterization. If the catheter cannot be passed, it must be assumed that there has been a rupture of the urethra until proven otherwise. The presence or absence of a rupture is best proven by the urethrogram; rarely will this be normal when the urethra is ruptured.

The technique of the urethrogram consists of the urethral instillation of a viscous, radio-opaque solution and the taking of antero-posterior and oblique x-ray views as the instillation proceeds. Several satisfactory solutions may be used, the 70% strength of the intravenous pyelogram solutions being among the most viscous and safest, since absorption from the tissues into which it may extravasate will be complete with a minimum of irritation and reaction of the tissues. Oily solutions must never be used since there is danger of embolism and the oil retained in periurethral tissue may give rise to severe inflammatory reactions. There is small danger in allergic reactions, even in patients who give a history of iodine sensitivity, and such reactions respond well to intravenous antihistamines and subcutaneous adrenaline. Approximately 20 cc. of the solution are instilled, using a rubber acorn tip on a 30 cc syringe which has been filled. The antero-posterior view is taken as the twentieth cc. is instilled. With the operator maintaining the syringe in place preventing any loss of dye, the patient is rotated toward the right hip into the right oblique position where the next exposure is made as the remaining solution flows into the urethra. The point of rupture and its extent are usually obvious and an accurate estimate of the procedure necessary for repair can be made.

The subsequent management of ruptured urethra from external trauma may be considered in three stages. Before any reconstructive surgical procedure is attempted, the urinary bladder must be drained. After a few minutes of unsuccessful attempts at catheteriza-

*Urology, Thayer Hospital, Waterville, Maine.

tion of the bladder through the urethra, there should be no more delay and a suprapubic cystotomy should be done. If the bladder has already emptied itself and there has been extravasation of urine into either the perivesical or periurethral spaces, the wide drainage of these spaces is the next most important step. It has been recognized for many years that such extravasation increases the mortality and morbidity, and that early drainage is necessary for prompt recovery. After opening the entire area widely, Penrose drains are brought out from the perivesical space through the space of Retzius and the cystotomy wound. For draining the anterior perineal space, wide incisions lateral to the peno-scrotal and the scoto-perineal junctions are best for reaching all parts of the space and for providing exits for Penrose drains. The drains should be left in place for from three to five days and shortened daily there-after. The cystotomy tube, preferably a large Pezzar drain, is removed after five to seven days and the wound is allowed to close in slowly.

The third important step in the immediate management of the rupture is the re-establishment of the continuity of the urethra. Occasionally, if the urethra has been severed as the result of a deep laceration of the perineum, the ends may be found in the wound and reapproximated directly with fine sutures over a splinting catheter. More often, however, the severed ends cannot be identified and reapproximation must be left to the remarkable regenerative powers of the urethral tissues to bridge the gap while being splinted with an indwelling catheter. By passing a urethral sound upward from the external meatus and another through the cystotomy wound and down through the posterior urethra, the sound may be guided up into the bladder. The open end of a small straight catheter may then be forced over the tip of the sound and brought back down through the urethra. The tip of the Foley catheter can be sutured to the end of the straight catheter and pulled up into the bladder and then inflated. A heavy silk thread should be tied to the Foley tip and brought out through the cystotomy wound with the Pezzar drain. Thus if some accident should befall the indwelling Foley, it can be replaced by attaching another to its external end and removing it through the cystotomy wound by means of retrograde traction on the silk.

If the rupture of the urethra is above the triangular ligament, and the base of the bladder along with attached prostate is elevated, it is helpful to use slight traction on the Foley catheter for the first three post-operative days, thereby bringing the urethral ends closer together. Traction should never be too long nor too strong since it is possible to cause pressure necrosis and permanent incontinence. If the rupture is below the triangular ligament there is no point in applying traction to the catheter. The catheter should be of a moderate size, about a 16F, since a larger one may overdistend the urethra and cause pressure necrosis, especially at the peno-scrotal junction. The catheter is

left in place for from two to three weeks, at which time urethrograms are repeated and the progress of healing is followed. The catheter may have to be worn for another two or three weeks, but the patient may be perfectly ambulatory during this time with little change in his activity. The urethra should be dilated at weekly intervals for the first month following removal of the catheter, and the interval slowly extended depending upon the occurrence of stricture.

General supportive therapy is maintained as well as any specific measures indicated by other results of trauma. Prophylactic antibiotics are given while drains are in place, fluids are forced to tolerance while the bladder is being drained by catheter, and the patient is ambulated as soon as possible but is not allowed to assume the sitting position. Warm sitz-baths, even when perineal wounds are open, help to clean this grossly contaminated area.

The case we have for illustration is a classic one as to type of injury, signs following the trauma, and the management. A 64 year old house painter fell from a ladder and straddled a beam. His bruised scrotum and perineum were so uncomfortable he was forced to lay down, though he had been able to walk home. The scrotum soon became swollen and "black and blue." About three hours after the fall he tried to void but could not. Soon he became painfully distended and reported to the emergency room complaining of urinary retention. His scrotum, penis, and anterior perineum were markedly edematous and ecchymotic, with a few drops of fresh blood at the urethral meatus. The bladder could not be palpated but suprapubic pressure was painful. Rectal examination revealed a normal prostate in good position, without pain or swelling. Attempts to pass a catheter were unsuccessful and a urethrogram was made immediately.

Figure 1. is the right oblique view of the urethrogram taken as the thirtieth cc. is instilled. Approximately 3 cm. above the peno-scrotal junction, seen as a kink in the urethra, the dye extravasates and forms an amorphous mass in the perineum. Obviously the urethra is ruptured and much of the perineal tissue is macerated as well. A suprapubic cystotomy was done and the perineum incised bilaterally to evacuate blood clot. A Foley catheter No. 16F was passed by pulling it through with a straight catheter which had been brought through the macerated area on a urethral sound passed from below upward. The Penrose drains were removed from the perineum in six days, the Pezzar drain was removed from the bladder on the seventh day, and the Foley catheter was removed on the twenty first day, at which time the second urethrogram was made.

Figure 2. is the oblique view of the urethrogram made on the third week following accident and repair. Healing has progressed satisfactorily with no sign of narrowing in the traumatized portion of the urethra, and only a small defect remaining open at the site of rupture. By this time the patient was able to go home



FIG. 1 — The oblique view of the urethrogram made immediately upon admission, following a straddle fall, in which the perineum was crushed and the urethra ruptured. The dye can be seen extravasating into the perineal tissue.



FIG. 2 — The oblique view of the urethrogram taken twenty-one days after injury, during which time catheter drainage had been continuous. Only a small pocket remains open in the site of rupture, and this disappeared in three more weeks.

on limited activity. He continued to wear the catheter for three more weeks, waiting for the defect to heal in. Dilatations were done at weekly intervals for four weeks, then at monthly intervals for four months. He has shown no tendency toward stricture formation as yet, but should be observed periodically in the future.

SUMMARY

Early diagnosis of rupture of the urethra is essential. Suprapubic drainage of the bladder should be done be-

fore there is extravasation of urine. The urethrogram is the best agent for demonstrating the presence or absence of a rupture. If there already has been extravasation, the involved areas must be drained widely and without delay. Urethral continuity is best re-established by using a small indwelling catheter as a splint, leaving it in place often for long periods to avoid formation of stricture, abscess, and diverticulum. Frequent dilatations are necessary following discontinuance of the catheter. One illustrative case is presented.

Tracheotomy In The Management Of Severe Head And Chest Trauma*

JOSEPH A. MARSHALL, M.D., F.A.C.S.

The importance of tracheotomy in the facilitation of removal of secretions from the tracheo-bronchial tree in many medical and surgical conditions has become generally accepted and has vastly broadened the indications for its employment. This procedure is especially indicated in cases of head and/or chest trauma. Any reliance upon simple pharyngeal suction in such cases is contrary. With a tracheotomy established, the problem of keeping the tracheo-bronchial tract constantly clear is well within the capacity of any nursing service — given the proper instructions.

The necessity of adequate oxygenation of cerebral tissues and the sensitivity of the brain to anoxia with its early untoward effects are well recognized. Reports in cases of cerebral trauma during the past few years have indicated that a good airway and the administration of oxygen are essential for adequate therapy and that this is best accomplished by early tracheotomy. The same holds true in any emergency involving a prolonged comatose state.

Where there is co-existing head and chest injury tracheotomy is doubly indicated. This procedure reduces splinting and voluntary glottic closure resulting from pain, and decreases paradoxical chest excursion. The dynamic relationship between the intra-thoracic and intracranial cavities is largely dependent upon the hydraulic transmission of pressure differentials through the vascular connections between these cavities. This explains the frequency with which cerebrovascular accidents are associated with straining on the part of the patient.

Partial obstruction of the airway may seriously aggravate intracranial bleeding — especially venous — by producing increased intrathoracic pressure. This may be circumvented by early tracheotomy.

Prolonged, continued or even intermittent anoxia produces physiological and pathological changes to cerebral tissue, such as edema, increased intracranial pressure, hypertension, dilatation of cerebral vessels and primary neuronal death. Thus it is necessary to get the greatest possible concentration of oxygen to the cerebral tissue without delay. At the same time increased carbon dioxide must be avoided as any rise in plasma carbon dioxide acts as a powerful vasodilator.

There is considerable evidence that the bradycardia

and hypertension produced by increased intracranial pressure may lead to pulmonary edema by causing right atrial and pulmonary hypertension. This would be further increased by the negative intrathoracic pressure resulting from an obstructed airway.

With prolonged anoxia both the cough reflex and respiratory excursions are markedly depressed, making it necessary to eliminate the increased bronchial secretions by tracheotomy. Tracheotomy reduces the "dead space" and tidal air, thereby lowering the dilution factor and allowing a higher pressure of oxygen to reach the respiratory epithelium than is possible by the mask or intranasal method. This assures the rapid elimination of carbon dioxide.

Tracheotomy may be indicated in any case of severe craniocerebral trauma. The neurological signs and symptoms may vary depending on the location and extent of brain damage. Spinal fluid may, or may not show evidence of bleeding. Pressure may or may not be altered. When the conventional procedures of oxygen administration, suction, postural drainage and pharyngeal airways have not resulted in improvement, or when it is evident that coma will persist over a twenty-four hour period, tracheotomy should be done.

Similarly, tracheotomy is indicated in those patients in whom, despite adequate airways and absence of clinical signs of obstruction such as coarse rhonchi or labored breathing, there is no evidence of improvement but apparent continued deterioration. Tracheotomy together with gentle bronchial aspiration usually will result in immediate improvement. Often the amount of thick tenacious mucus obtained is surprisingly large in spite of the apparent but misleading negative physical findings.

During the past three years we have used tracheotomy on five patients who had sustained severe head injuries:

CASE I. A twenty-one-year-old white male who sustained a severe head injury from an automobile accident. On admission to the hospital he was comatose, cyanotic, and in severe shock. Emergency tracheotomy was performed and anti-shock therapy started. He regained consciousness two weeks after the accident; the tracheotomy tube was successfully removed one week later, and he made a satisfactory recovery.

CASE II: A nineteen-year-old white male who was admitted to the hospital in a comatose state following an auto accident. He had sustained a severe head in-

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jury. Four days after admission to the hospital a tracheotomy was performed because of progressive apparent deterioration of the patient's condition. Within a few hours following the tracheotomy his condition improved. He regained consciousness four days later; the tracheotomy tube was removed one week later, and he made a good recovery.

Emergency tracheotomies were performed on three other male patients — ages 72, 75 and 69 — who had received severe head injuries. They all succumbed within a few hours but not from inadequate tracheo-bronchial toilet. Two of the above sustained severe subarachnoid hemorrhages in addition to generalized cerebral contusions and depressed skull fractures. The

third victim suffered from multiple rib fractures, hemo-pneumo-thorax and depressed skull fracture.

I feel certain that the institution of tracheotomy in the first two cases cited were life saving, and, in the last three cases alluded to, undoubtedly forestalled immediate death.*

CONCLUSION

The utilization of tracheotomy in cases of severe cerebral trauma is an important means of combating cerebral anoxia with its serious effects. Its use will serve to reduce the morbidity and mortality associated with such injuries.

*The tracheotomy in cases I, III, IV and V was performed by Dr. L. W. Pratt of the Otolaryngology Service.

Metabolic Alkalosis

VAUGHN R. STURTEVANT, M.D.*

INTRODUCTION

Among the disturbances of body chemistry seen in patients in a general hospital, one of the more important is metabolic alkalosis. Its importance lies not in its frequency, although it is not at all uncommon, but in the fact that the patient with this electrolyte abnormality has a preventable or, if it has already occurred, a remediable situation. This paper is an attempt to review certain basic concepts from the realm of physiology and pathological physiology, concepts which underlie the correct prophylaxis and therapeutic management of metabolic alkalosis. Although clinicians are familiar with the numerous situations in which the electrolyte pattern characterizing metabolic alkalosis occurs,** there has been insufficient emphasis on the underlying similarity of these situations. Therefore the importance of thinking of this disorder as a syndrome of diverse etiologies but of fairly constant underlying pathophysiology, irrespective of these diverse etiologies, must be emphasized. Much of the interest in this subject has been manifest in the past few years by researchers, each

interested in certain features of metabolic alkalosis, but the importance of their concepts for therapeutic management needs further emphasis for the clinician. Therefore some of these concepts will be reviewed.

PHYSIOLOGY

The mechanism whereby the kidney excretes acid must be discussed first since it is mainly this organ which controls the constituents of the extracellular fluid. Pitts^{1,2} in studies done in the late 1940's demonstrated that the kidney rids the body of acid by the direct tubular excretion of hydrogen ions which are exchanged for sodium ions salvaged from the glomerular filtrate. Incidental to this process bicarbonate ions are generated. The source of the hydrogen ions for excretion and for the newly generated bicarbonate ions is in the reaction $\text{H}_2\text{O} + \text{CO}_2 \rightleftharpoons \text{H}^+\text{CO}_3^- \rightleftharpoons \text{H}^+ + \text{HCO}_3^-$. An enzyme, carbonic anhydrase, facilitates this reaction. Apparently not only is this the method whereby the kidney is able to excrete a urine high in titratable acidity but also these excreted hydrogen ions are available for combination with ammonia for excretion in ammonium salts. The importance of this sodium-hydrogen ion exchange for this discussion lies in the theory that under certain circumstances this process may continue apparently to excess and aggravate or produce an underlying alkalotic tendency. This occurs when the serum potassium is low, according to Berliner.³ In order to explain why this happens, why administration of potassium salts produces an alkaline urine, why alkalotic patients tend to become hypokalemic and why inhibition of carbonic anhydrase produces an increase in the urin-

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**It is seen from the Henderson-Hasselbach equation describing the bicarbonate-carbonic acid buffer system, $\text{pH} = 6.1 + \log \frac{\text{B} + \text{HCO}_3^-}{\text{H}^+}$, that factors which produce a primary increase in the blood bicarbonate will result in alkalosis. The chloride level falls as normal osmolality is maintained. Note that this pattern of high bicarbonate and low chloride is also seen in respiratory acidosis.

ary loss of potassium, Berliner suggested that there is a competition between hydrogen ions and potassium ions for some component in the mechanism of the hydrogen ion-sodium ion exchange in the above described theory of Pitts. Thus, in the patient with a lowered serum potassium, whatever the cause; there exists less competitive inhibition of hydrogen ion excretion, a condition favoring acid loss and development of alkalosis.

The common coexistence of hypokalemia and alkalosis has been mentioned. Not only does hypokalemia induce alkalosis through increased loss of acid through the kidneys, but also with the development of the alkalotic state there is an intracellular migration of sodium ions and hydrogen ions to replace the excessively lost potassium ions.⁵ This thereby further decreases extracellular hydrogen ion concentration (alkalosis). In the normal healthy body there exists theoretically a portion of intracellular potassium which can move without clinical effect out of the cells into the extracellular fluid to maintain a normal potassium level for competition with hydrogen ions for tubular excretion. Thus this mobile portion of body potassium which can move without clinical effect offers a reserve defense against alkalosis, but if pushed too far allows excessive hydrogen ion migration into cells with the development of extracellular alkalosis. In addition it is fairly well established⁴ that alkalosis per se has a deleterious effect on renal function and this may impair the kidney's defense against alkalosis in a vicious cycle.

The next factor which contributes to a state of metabolic alkalosis is the influence of adrenal cortical hormones on the renal tubule and possibly on intraextracellular relationships. In effect cortisone and cortisone-like steroid hormones produce potassium depletion and thus acid excretion is favored with a tendency to alkalosis, or at least this is one interpretation.⁹ There is no doubt that under the influence of ACTH or cortisone hypokalemic alkalosis is induced.^{8,11} In the alternative mechanism for this effect, sodium retention and alkalosis are considered primary with the potassium loss occurring secondary to sodium retention.

The relative importance of renal tubular factors mentioned above and of ACTH type stress effects on the production of alkalosis is a matter of some contention. Excretion of acid by routes other than the kidney has been implied as an adrenal cortical effect. However, some studies suggest that quantitation of potassium losses in humans and animals and of the related acid losses which can be measured are not sufficient to explain the metabolic alkalosis which may be seen in some clinical instances. Moore⁶ has demonstrated in subjects with acute potassium losses that the ACTH stress phenomenon produces an alkalosis not seen in other unstressed subjects with roughly similar potassium losses.

Another view of hypokalemic hypochloremic alkalosis emphasizes the relative retention of sodium and chloride. Thus, if sodium is retained disproportionate-

ly more than the chloride alkalosis results; for example, after the administration of sodium bicarbonate or ACTH. Cooke and others have done studies which suggest that the renal tubular effect of potassium deficiency is to alter the sodium to chloride ratio so as to favor sodium retention and chloride excretion.⁷

CLINICAL CONDITIONS

With this brief review of some of the current, somewhat controversial ideas regarding hypokalemic, hypochloremic alkalosis, one may consider the various clinical situations in which it occurs. Note that these conditions share an iatrogenic factor in the etiology.

The best known example occurs in the post operative patient¹⁰ on gastric suction. Here both the stress factor from the surgery and the acid loss through the tube are at work to produce the alkalosis. Intravenous fluids containing insufficient potassium complete the pathogenesis for a hypokalemic alkalosis. Symptomatically the patient manifests lethargy, anorexia, apathy, weakness and abdominal distention.

Another outwardly different clinical situation with the same body chemistry occurs in the patient in heart failure with great fluid retention subjected to massive diuresis with mercurial diuretics. Here there may be excessive acute potassium loss and the concomitant appearance of an alkalotic state. Although the whole explanation of the cause of potassium loss which sometimes occurs in certain patients with mercurial diuresis is not yet at hand, signs and symptoms observed in these patients are very similar to those seen in the post operative patients with gastric suction.

A comparable situation occurs in the patient whose nutrition for some reason must be maintained for long periods on intravenous fluids. If potassium is omitted from these fluids, these patients too develop characteristic clinical and chemical alkalosis.

Next, mention must be made of the clinical use of the steroid hormones which in some individuals produce a moderate alkalosis like that seen in Cushing's syndrome.

Finally, the treatment of certain acidotic conditions, infant diarrhea, methyl alcohol poisoning and renal acidosis for example, may involve the administration of alkalinizing agents such as sodium bicarbonate or sodium lactate, and in some instances an alkalosis may readily replace the acidosis, even while the CO_2 combining power remains less than normal. This is explained by a lag in respiratory compensation. In addition, it should be mentioned that large amounts of sodium bicarbonate are sometimes ingested by patients for relief of gastrointestinal complaints. Such patients sometimes are reluctant to admit to this self medication.

PRINCIPLES OF TREATMENT

In all of the above conditions, the tendency to coexistence of hypokalemia and alkalosis must be borne in mind. From the foregoing discussion of theoretical

factors it is seen that adequate potassium intake, acidifying salts and the avoidance of adrenal cortical stimulation in so far as possible constitute a therapeutic triad in patients who are or may otherwise be expected to become alkalotic. Thus, when alkalosis exists potassium must be given and when a low potassium is reported alkalosis should be suspected and consideration given to treatment with an acidifying agent such as ammonium chloride. During ACTH treatment or therapy with one of the cortisone-like drugs or after surgical stress, it must be realized that hypokalemic alkalosis may appear rather easily, even with small potassium losses, and one should hesitate to use sodium lactate solutions in these patients unless there is a well demonstrated acidosis. Similarly, ammonium chloride and potassium chloride given in full dosage during vigorous mercurial diuretic therapy will avoid the hypokalemic alkalosis which may otherwise appear in some of these patients. Finally, extra potassium chloride offers some protection to patients receiving the steroid hormones.

SUMMARY

1. Some of the current concepts of the pathological physiology of metabolic alkalosis are reviewed.

2. The underlying similarity of the outwardly different clinical situations in which metabolic alkalosis may be found is emphasized.

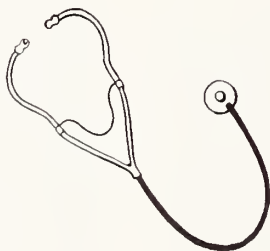
3. The rather simple therapeutic prophylactic principles of management of this syndrome are mentioned.

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The Rationale Of Surgery In Deafness

LORING W. PRATT, M.D.*

Accurate estimation of hearing impairment has been made for many years. It has been known even longer that many children who are hard of hearing are benefitted by adenoidectomy; and, in recent years, newer surgical techniques, particularly those devised by Holmgren and Sordeille and developed more fully by Lempert, have provided a definite surgical approach to hearing impairment caused by impairment of motion in the ossicular chain. Most recently, Rosen has been able to mobilize the fixed stapes and in some cases improve hearing. It is a general exposition of the reasons for which these surgical techniques are successful that this paper is intended.

The physiology of hearing is a complex problem, but it may be described simply, for the purpose of this discussion, if we will consider only the elementary mechanical principles related to hearing. Sound is a vibration in air, providing alternate areas of rarefaction and compression of the air molecules which is known to exert a definite pressure measured in dynes/cm², the unit of which is the decibel. Sound pressures introduced into the external ear are transmitted across the middle ear by vibration of the tympanic membrane and by subsequent vibration of the auditory ossicles. The footplate of the stapes vibrates in the oval window and thereby produces motion of the fluids of the internal ear. As the footplate of the stapes is pushed inward, the internal ear fluids are displaced and the round window membrane is pushed out, Fig. 1. As the footplate of the stapes is pulled out, the same fluid wave is transmitted through the cochlea and the round window is sucked in. It is this alternate in and out motion of the footplate of the stapes and its consequent effect on the fluids of the internal ear, demonstrated by movement of the round window membrane, that causes stimulation of the nerve endings in the organ of Corti. Without motion of the fluids of the internal ear useful hearing is impossible. If the footplate of the stapes is fixed or its motion is interfered with in any way, hearing is impaired. It is to circumvent this sort of hearing impairment that mobilization of the footplate of the stapes and fenestration have been devised.

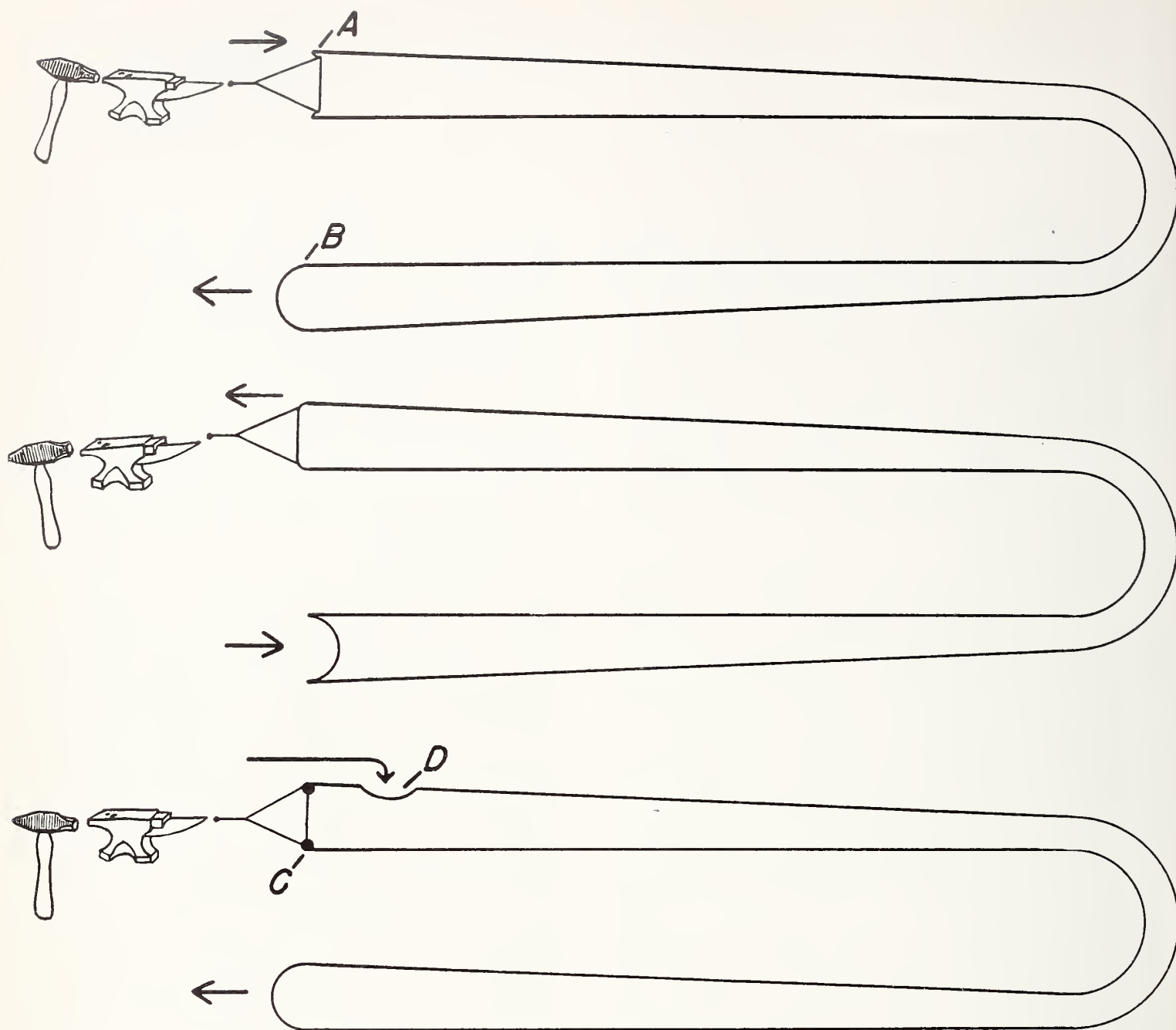
Vibration of the auditory ossicles is most easily produced when the air pressure within the middle ear is the same as that without the middle ear, so that vibration of the tympanic membrane and ossicles takes place in the absence of the necessity of overcoming work caused by unequal pressures on opposite sides of the

tympanic membrane. Ventilation of the middle ear and maintenance of proper middle ear pressure is accomplished through the eustachian tube. By maintenance of patency of the eustachian tube it is possible to maintain proper pressure relationships between the middle and external ears. It is apparent that any obstruction to the patency of the eustachian tube would significantly interfere with the ventilation of the middle ear. A large adenoid either mechanically presses on the eustachian tube, produces discharge which plugs up the eustachian tube, or, produces inflammatory changes in the mucous membrane of the nasopharynx and eustachian tube torus. It is equally true that allergic changes in the mucous membrane of the nose and nasopharynx produce edema of the eustachian tube with consequent impairment of its patency. There is no doubt that these are two of the most common mechanisms by which eustachian tube patency is impaired. We have all experienced temporary acute eustachian tube obstruction when we have had upper respiratory infection and the infectious edema of the nasopharynx and eustachian tube has plugged our ears. This produces an acute deafness exactly the same way that longstanding obstruction produces chronic deafness. The sequence of events within the middle ear in eustachian tube obstruction is as follows: The air pressure in the middle ear is reduced because blood circulating through the mucous membrane of the middle ear absorbs some of the oxygen from the air trapped in the middle ear and by that means reduces the pressure inside the middle ear. This reduced pressure causes retraction of the tympanic membrane and extravasation of blood serum into the cavity of the ear. In some instances, if this obstruction is acute, as we find in acute aero-otitis media, blood may be found in the secretion of the middle ear.

The surgical approach to this condition is fundamentally the removal of a large, boggy mass of adenoid, thereby improving eustachian tube patency and consequently improving ventilation of the middle ear. Sometimes it is necessary, in the acute stage of the disease, to perform a paracentesis of the tympanic membrane, in order to remove secretions from the middle ear so that these will not become thick and organized as adhesions impairing the motion of the auditory ossicles. Paracentesis also equalizes the air pressure on both sides of the tympanic membrane and prevents further progress of the process.

The second form of deafness, which is benefitted by surgery, is an entirely different problem. Again, we have a conductive loss as in the case of eustachian tube ob-

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— D. GOOCH - 1957

FIG. 1

FIG. 1. (A) This shows the coils of the cochlea schematically uncoiled and the relationship between pressure into the oval window by the foot-plate of the stapes (A) and the bulging of the round window membrane (B). This tube is entirely surrounded by bone so the only point at which pressure may be released is the round window membrane.

(B) This shows the effect of withdrawal of the foot-plate of the stapes and sucking in the round window membrane.

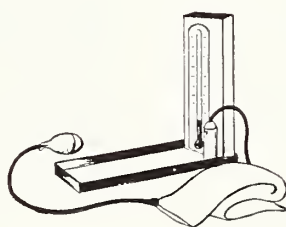
(C) Demonstrates the way sound pressures, circumventing the fixed stapedial foot-plate (C), and entering the cochlea and coils through the surgical fenestra (D) are able to produce oscillations in the internal ear fluids and thus cause motion of the round window membrane.

struction. The conductive hearing loss in this instance, however, is based on a different anatomic abnormality, due to otosclerosis. Vibration of the auditory ossicles is impaired in this disease because of fixation of the ossicular chain at the footplate of the stapes by means of bony deposition. This disease is hereditary, more common in females, and it is said to be aggravated by pregnancy. Fixation at the foot-plate of the stapes has been described by Wolfe as caused by a hemartoma, not merely as a deposition of thick, dense bone. The means of circumventing this impairment to hearing has for many years been the operative procedure known as fenestration. This procedure has as its aim the circumvention of the ossicular chain and the establishment of a new "oval window," so that the fluids of the internal ear may be stimulated to move and vibrate when sound is introduced into the ear. In this procedure, a mastoidectomy is performed in which the horizontal semicircular canal is exposed. In the vestibule a window, or fenestration, is constructed in order that sound vibrations may then cause the movement in the fluids of the internal ear, necessary to hearing. About 75% of carefully selected patients have obtained good hearing from fenestration. A more recent procedure to relieve the obstruction to the foot-plate of the stapes has been introduced by Rosen, known as "mobilization of the stapes." It makes a direct attack upon the area where the interference with sound transmission occurs and, by delicate surgical procedures, this wall of bony ankylosis at the foot-plate of the stapes is broken down

so that the stapes may again move. One might wonder why re-ankylosis does not take place following a successful mobilization but such does not seem to be the case. As a rule, if the mobilization procedure is successful, the hearing impairment is maintained for at least a few years. The procedure has not been used for long enough to determine whether the impairment will be permanent. However, if re-ankylosis were to take place one might expect it to occur within at least three or four years. Only about one-third of otosclerotic patients are improved significantly by this procedure, but it is very important to note that mobilization of the foot-plate of the stapes does not interfere with subsequent fenestration should such further surgery be found desirable.

It is obvious from the above discussion that pure nerve type deafness will not be altered by surgery as the mechanical approach effects in no way the nervous mechanism. In cases of mixed deafness, where the conductive element may be overcome by surgery, such treatment may be well indicated, even if complete improvement is not anticipated.

This paper has briefly described the mechanics of hearing, the ways in which mechanical or conductive deafness may be produced, and the rationale of the surgical procedures used to correct these defects. The usefulness of these techniques in mixed types of deafness is indicated, and their uselessness in nerve type deafness is demonstrated.



Some Aspects Of Intra-Uterine Fetal Anoxia

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Fetal tolerance to comparative hypoxic or anoxic conditions has long been recognized by fetal physiologists. At birth the infant emerges from a stage of lower oxygen demand to a state of much greater requirement. Measurement of oxygen content of arterial cord blood in the newborn has shown how rapidly and efficiently the blood oxygen content may be re-established in infants who have been the subject of anoxic episodes of fifteen to twenty-five minutes at birth.⁽¹⁾

Although much information is available in testimony of the ability of the newborn to withstand anoxic insult, the late effects of prolonged anoxia upon the subsequent development of the child is much more pessimistic. A recent study at Johns Hopkins University⁽²⁾ indicates that in a group of infants with cerebral palsy 54% had evidenced difficulties at birth in respect to respiration, attacks of cyanosis, feeble cry, inability to nurse and feeding difficulties. These workers do not attribute the incidence of cerebral palsy directly to the factor of birth trauma. Brain abnormalities due to unfavorable intra-uterine environment with intrauterine anoxia are incriminated as the major factors. Opinion is hardening that progressive intra-uterine anoxia is the most important cause of cerebral palsy and of neonatal death. How is this problem of assessment of the intra-uterine condition of the infant in respect to oxygen needs to be approached from the point of view of investigation? It is only within the clear understanding of the physiological relationship of the fetus to its intra-uterine environment that any advance can be obtained in this problem. Among the foremost requirements is an accurate knowledge of the volume of uterine blood flow, the oxygen diffusion across the maternal-placental circuit, fetal metabolic changes, and a method of correlation between measurable alterations in the fetal heart and the degree of intra-uterine fetal oxygenation.

STUDIES OF THE VOLUME OF MATERNAL-PLACENTAL BLOOD FLOW

The work of Barcroft (1946)⁽³⁾ and his colleagues contributed much to the knowledge of placental blood flow in experimental sheep, but the evidence was indirect and not applicable to human conditions. A more direct study of human maternal blood flow, therefore, became an urgent necessity. The introduction of radioactive isotopes offered⁽⁴⁾ new methods for the study of placental function. Pohl & Flexner (1941) explored this new field by the injection of isotonic sodium

chloride tagged with Na^{24} into the maternal blood stream and measured the quantity of Na^{24} transferred to the fetus. Gellhorn, Flexner & Hellman⁽⁵⁾ published a preliminary report on transfer in the human. A valuable contribution to the study of maternal-placental blood flow was made by McClure-Browne & Veall⁽⁶⁾ who measured radioactive Na^{24} disappearance rates by injection of Na^{24} in saline into the chorio-decidual space. The conclusions of these workers showed that (1) normal maternal placental blood flow between the 38th week of pregnancy and term is of the order of 600 ml/min.; (2) the conditions of preeclampsia and chronic hypertension reduce the flow to about one-third of this figure; (3) the healthy placenta has a functional safety margin of over 50 per cent. Work on the estimation of uterine blood flow in normal human pregnancy at term has been advanced recently by James Metcalfe⁽⁷⁾ and associates who made calculations based on the Fick principle⁽⁸⁾ by the administration of nitrous oxide gas to patients at Caesarean section and calculating the arteriovenous nitrous oxide difference across the uterus. The average uterine blood flow was estimated at 500 cc. per minute and the average oxygen consumption of the uterus and its contents was calculated to be 25 cc. per minute. The figure for normal blood flow measurements are substantiated by other workers and the figure of 492 plus or minus 195.4 ml/min. can be accepted as the term flow in a normal single pregnancy.

The measurement of this important function is clearly associated with the next phase of research and that is the actual rate of oxygen diffusion across the placental circuit. As yet, there is only mere speculation about this possibility. It indicates a real field for obstetric research. It is obvious that physiological data is needed to correlate more exactly any clinical methods of detection of intra-uterine fetal distress.⁽⁹⁾

METABOLIC CHANGES ASSOCIATED WITH INTRA-UTERINE FETAL DISTRESS

Fetal metabolic changes described during intra-uterine distress may be attributed to the consequence of hypoxia affecting different organs and tissues of the body in varying degrees and it is probable that death results from disorganization at the cellular and enzymatic level from severe anoxia. The metabolic changes are thus the result and not the cause of circulatory failure. The reaction to anoxia involves responses on the body as a whole, as well as upon specific organs. The reaction to intra-uterine distress and anoxia may be characterized by a rapid shift in protein metabolism in the direction of increased catabolism and decreased

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anabolism, hyperglycemia due to impaired glucose tolerance and increased gluconeogenesis and increased catabolism of fat as indicated by the occurrence of fatty liver and fatty heart. It is probable that the fetal adrenal cortex is stimulated to an enhanced secretion of its steroids, and indeed many of the above metabolic reactions are consequent upon increased adrenal steroid secretion.

As circulatory failure progresses in the fetus there is a superimposed increase in plasma amino nitrogen. The catabolism of amino-acids occurs largely in the liver and there appears to be a correlation between the blood amino-acid nitrogen and the oxygen content of the portal vein.⁽¹⁰⁾ This is consistent with the demonstration of the dependence of the liver on the portal vein for its oxygenation and the failure of this supply in anoxia.

Obviously, much remains to be investigated before a logical approach can be made to the diagnosis or treatment of intra-uterine distress by biochemical means from arterial blood analysis but the possibilities offer consideration of biochemical studies in this problem which contain implications of new methods.

FETAL HEART AND BRAIN RECORDINGS

The evaluation of the fetus in utero by instrumental recording means has been the subject of investigation since Cremer⁽¹¹⁾ in 1906 recorded small deflections of fetal origin in a pregnant woman at term by electrocardiography. Advances in electronic amplification and recording methods have, in recent years, increased the interest in this mode of approach to the problem of cardiac changes in association with anoxia in utero. The early work in this direction proved disappointing because the fetal heart recordings were inadequate representations of fetal complexes.

Recent study of the recording problems have resulted in some advances in this direction.⁽¹²⁾ Fig. 1 demonstrates the apparatus used for obtaining fetal electrocardiograms. Fig. 2 shows an attempt at correlation between fetal cardiac complexes and fetal oxygenation at birth.

Fetal electrocardiographic patterns in normal pregnancy and in conditions of intra-uterine anoxia may be of value in determining the clinical conduct of pregnancy in specific cases.

The fetal brain is, of course, the most sensitive area to oxygen alterations. Prenatal fetal electroencephalography has been employed with the use of abdominal and vaginal leads,⁽¹³⁾ and showed slow waves (3 per second) of low voltage (10-20 microvolts). No knowledge is available of these wave characteristics in conditions of anoxia.

SUMMARY

Various aspects of fetal intra-uterine anoxia are becoming increasingly susceptible to investigation. The maternal-placental volume of blood exchange has been

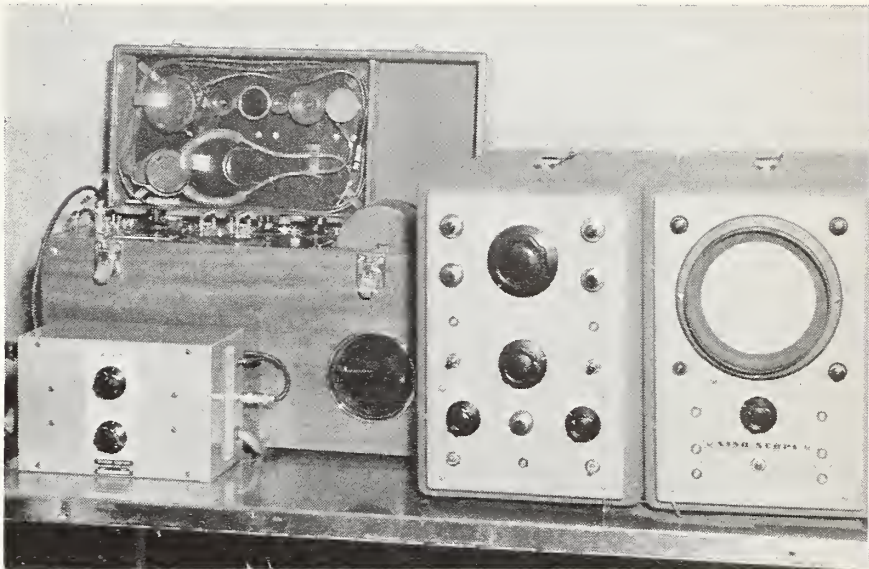


FIG. 1 — Vector system, oscilloscope, filters and recording unit (Sanborn) for fetal prenatal electrocardiograms.

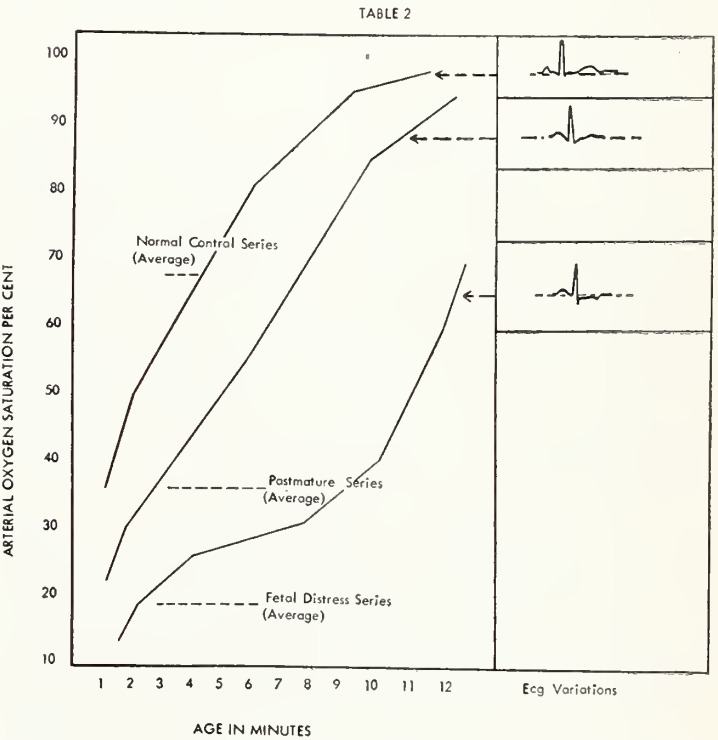


FIG. 2 — Average arterial oxygen saturation of umbilical cord blood and rate of increase from age 2 minutes to age 12 minutes in (1) normal control series (2) postmature series (3) fetal distress series with type of prenatal fetal Ecg variations associated with each series.

described and suggestions made regarding the study of intra-uterine anoxia by biochemical and instrumental methods.

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SPECIAL ARTICLES

Excerpts From Thayer Hospital Teaching Program

THE EDUCATIONAL COMMITTEE

The following are items abstracted from the records of the teaching program at Thayer Hospital. Clinical pathological conferences, papers by members of the staff, case presentations, staff consultations and panel discussions make up this program given in two hourly sessions on Tuesday and Thursday of each week.

Itching after a warm bath suggests polycythemia vera.

The hyperventilation syndrome is a common cause of chest pain, pain accentuated by respiration and motion, usually left sided and accompanied by tenderness to touch over the area and occasionally paresthesias of the chest wall. The mechanism of production is through sighing, yawning, mouth breathing, air swallowing and sighing type of speech. An actual costal chondral syndrome results due to constant thoracic breathing. Proof of diagnosis is easily obtained by having the patient hyperventilate, this giving reproduction of symptoms. Treatment is to keep the mouth closed.

TO PREVENT DRUG REACTIONS

Ask patient if he has received the drug you intend to use. Keep in mind that allergics are apt to have violent reactions. A large percentage of fatal reactions occur in atotics. Look for a history of previous reaction such as hives or asthma. If previous reactions have occurred, avoid drugs with similar chemical formula. Avoid if possible giving drugs with antihistamine, ACTH or Cortisone. These may just delay the reaction. Give drugs orally if possible. Give injections into the arm where tourniquets can be applied above the injection if immediate reaction occurs. Do not rely on skin tests. They may be negative even after positive history of previous reaction.

Attacks of red painful rash occurring on arms, trunk and legs to a less degree, precipitated by anything that stimulates the circulation such as warmth, exercise and emotion and relieved by five to ten minutes of rest or getting away from the warm environment should suggest the sweat retention syndrome. There is usually a history of previous easy or profuse perspiration, none occurring at the time of the rash. Treatment is with Pilocarpine, Pro-Banthine or similar agents.

RATIONAL TREATMENT OF DISSEMINATED LUPUS ERYTHEMATOSIS

In the L. E. cell, desoxyribonuclease is present in excessive quantities. This nuclease breaks down desoxyribonucleic acid. Usually in normals and in leukemics there is an inhibitor to this reaction also present in the cell. The inhibitor is not present or is not functioning in the L. E. cell. Intramuscular injections of whole blood from normals or leukemics caused decided clinical improvement in seven out of ten cases.

In incompatible blood transfusion reactions, hemorrhagic manifestations may be prominent. These are usually due to hypofibrinogenemia. At autopsy, fibrin and platelet thrombi may be found disseminated throughout the body. In treatment, rapid use of or massive amounts of fibrinogen may result in more fibrin thrombi. Give the fibrinogen slowly.

TREATMENT OF DIGITALIS TOXICITY

Stop the drug. Obtain an electrocardiogram for better evaluation. Give potassium chloride in large doses, 2 grams three or four times a day. The latter is given empirically. It is known, however, that potassium prevents digitalis from entering the cells and therefore may be protective in the presence of a normal serum potassium. Clinically, there is more digitalis toxicity in the presence of a low body potassium. Finally, it is safe to assume a low intra-cellular potassium and to give potassium in large doses unless of course there is renal shut-down with anuria. The so-called spontaneous re-digitalization on removal of edema fluid is actually a potassium loss rather than mobilization of digitalis into the cell.

There are two conditions in which children and infants become acidotic more easily than adults: first, with starvation; second, with diarrhea. These can be corrected with relative ease. Hypotonic solutions with glucose lactate and saline allow for a much more natural return. An important point to remember is that speed of return is not necessary. *The manner of giving intravenous fluids is complex and one may need to refer to charts to compute the surface area.* However, one can estimate from known fluid loss plus the amount of

diarrhea the amount of fluid needed. There is also enough error in the charts to allow some flexibility in treatment.

Patients with diabetic acidosis should not die. A woman of twenty-one was admitted in acidosis. Diabetes was of one and one-half years' duration. There had been slow onset of drowsiness, thirst and frequency following a mild upper respiratory infection. She was alert and on admission gave her history. She had Kussmaul type respiration, acetonuria, glycosuria, CO_2 of 13 Milliequivalents and fasting blood sugar of 267 mg/100 ml. No evidence of infection was found on examination. She had been receiving 38 units of NPH insulin daily. Treatment was insulin, 100 units subcutaneously stat at eleven p.m. Two liters of saline were given in the first two hours, then more slowly one and one-half to two liters were given. The patient was improved in four hours, was clear mentally and was

taking fluids by mouth. By 4:30 a.m., there was headache. The patient had had a total of 200 units of insulin. The urine revealed a 2+ glucose and was free of acetone. Glucose intravenously was given at the sixth hour of treatment. At 5:00 a.m. the patient suddenly lapsed into coma after vomiting. Physical examination revealed a normal blood pressure but wide pulse pressure. One pupil was dilated. Neurological examination was otherwise negative. Pulse was full. She was breathing stertorous'y. She looked like a patient with a cerebral vascular accident. There were, however, no other localizing signs other than the dilated pupil. Respiratory type of death occurred within the next half hour. Post mortem revealed a minimal bronchopneumonia in the left lower lobe and a conus medullaris with diffuse cerebral edema. There were no specific intracranial lesions. The urinary output had been good from the start.

Cycloplegia and the Optometrist

A Question of Malpractice for the M.D.

HOWARD F. HILL, M.D., RICHARD H. DENNIS, M.D.*

It has been brought to our attention that occasionally practicing physicians have been asked to administer cycloplegic medicine for optometrists so that the optometrist may then refract (fit glasses) to children and complicated refraction cases. It is also noted that certain M.D.'s do not know that optometrists are not medically trained and not legally allowed to use or prescribe medicine in any form. They are not doctors of medicine and only use the title of doctor because of state legislative action.

Although this has happened in only a few isolated instances, the dangers involved are considerable.

First, there are cases in which a cycloplegic may be disastrous; namely, in cases of glaucoma in which the patient might become blind. This is especially true of the narrow angle acute type of glaucoma in patients who may never have had a previous attack. This type of eye can only be safely recognized by a well trained ophthalmologist.

Secondly, malpractice suits against the optometrist would not apply, as he is not a doctor and did not prescribe the drug. The M.D. would bare the brunt of the legal action and rightly so.

Optometrists are not trained to the degree that they can judge the type of case needing cycloplegia and the great majority of them realize this and do not compromise a friendly physician in this way.

*Thayer Hospital, Waterville, Maine.



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The Journal of the Maine Medical Association

DANIEL F. HANLEY, M.D., Brunswick, Editor

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Guest Editorial

The Changing Pattern Of Medicine

FREDERICK T. HILL, M.D.

When we think of the tremendous scientific developments of the past few years, it would seem, indeed, that we are practicing in the Golden Era of Medicine. Largely as a result of research in biochemistry and physics, we now possess diagnostic and therapeutic procedures which would have been beyond comprehension a few years ago. These, together with further advances of the future, make a changing pattern of practice inevitable.

Similarly the scope of practice and its responsibilities have expanded. The physicians today must be concerned with preventive, habilitative and rehabilitative measures, as well as curative procedures. We must be ever alert to the particular skills in allied medical and non-medical fields which would benefit the patient and speed his recovery. We must think in terms of complete patient care.

We have seen and are still seeing a great expansion of our hospital system, influenced in no small degree by the Hill-Burton Program. Facilities for the care of patients under the best conditions are now available throughout the country. With modern transportation, these are easily accessible to a great majority of the population.

As a result of these developments, medicine has become so advanced, so complicated, that no single physician can begin to master it in its entirety. Even in the specialties, the fields have so broadened that it would require something of a prodigy to acquire all the skills and techniques and to continue equally proficient in all of them throughout one's career. While a general working knowledge provides for a satisfactory diagnosis in most instances, the ability, the skills to carry out proper therapy, surgical or medical, demands concentrated efforts.

This would seem to require something far different from what we might term the "solo practice" of earlier days. None of us has the necessary ability to master all the knowledge in our own and allied fields, knowledge which may have important bearings in the solution of the problems we face. We must make greater use of the consultations and of the joint management of therapy, based upon the indicated professional skills that may be available, not disregarding the benefits possible in certain non-medical fields such as biochemistry, physics, microbiology and special health education, as well as in physical and occupational therapy.

This implies a sharing of work among one's con-

freres, an informal division of labor, based upon particular interests and skills. It does not mean rigid limitations, a closed shop, but a recognition that certain problems and procedures require certain special knowledge and that when this is available, use should be made of it. It may require honesty, courage and altruism, but the results should make it laudable and, in the end, rewarding.

Competition is an inevitable product of a free economy and in the world of business is conducive to pro-

gress. This is not necessarily so in a profession such as medicine. While scientific competition may stimulate progress, economic rivalry may prove quite the reverse. The urge for purely financial gain rarely leads to the heights from which one may glory in the broad horizons of medicine. To be true to our trust and to make the best use of what our profession has to offer, we should replace competition with cooperation, to the end that we may provide our patients with the best and most complete care. This poses a challenge to us as physicians.

Across The Desk

The Placement Service

*"Small service is true service while it lasts;
of humblest friends, bright Creature! scorn not one;
The Daisy by the shadow that it casts,
Protects the dew drop from the sun." . . . Wordsworth*

In a sincere effort to solve the problem of adequate medical care for the people of rural Maine, the Doctors of Medicine have set up and operate a placement service. During the past eighteen months, sixty-three communities representing over 150,000 people have asked for help to find an M.D. During the same period, seventy-three Doctors of Medicine have started new practices in the State, and the following is a list of men who have indicated their interest in Maine medicine.

The age distribution of Maine physicians clearly indicates that increasing numbers of young, well-trained M.D.'s must be recruited during the next ten years to help to replace the large number of older men.

Burton in his *Anatomy of Melancholy* said, "All places are distant from heaven alike." But to a young M.D. in search of a location in which to practice, the distance to the nearest medical facility is of more immediate concern, and more medical facilities for rural Maine is the logical extension of the present placement program.

The Hill-Burton Hospital Survey and Construction Act has created thousands of new medical facilities. For the most part, this construction has been confined to the urban areas. Our efforts must now be bent toward the construction of adequate medical facilities in rural Maine.

Doctors of Medicine Interested in Maine Practice

ANESTHESIOLOGY

*Carolina I. Campomanes, M.D., 444 E. 68th St., New York 21, N. Y., age 30, University of the Philippines, 1951, three-year residency in Anesthesiology, available September 1, 1957.

*Peter J. Fennel, M.D., 65 Berkeley St., Portland, Maine, age 28, Cornell University Medical College, 1952, veteran, available August, 1957.

GENERAL PRACTICE

*Ercle Barattucci, M.D., 1225 Midland Avenue, Bronxville, N. Y., age 46, University of Rome, Italy, 1934, available immediately.

Alexander D. Brickler, M.D., 175 Broadway, Long Branch, N. J., veteran, age, medical school and availability unknown.

*Fred S. Elesh, M.D., 9415 Cresta Drive, Los Angeles 35, California, age 29, University of Illinois, 1951, available December 1, 1956 (interest in College Health Service or Prep School, etc.).

*Additional information, such as personal data, references, etc. available in this office.

*George A. Erkus, M.D., U.S.S. Hornet (CVA-12), F.P.O., San Francisco, California, age 34, University of Istanbul School of Medicine, Turkey, 1947, active military duty, available in the Spring of 1958, (interest in surgery).

*David S. Hastings, M.D., 228 South 12th Street, Salina, Kansas, age 29, Boston University School of Medicine, 1953, active military duty, available March, 1957, (interest in Anesthesiology).

*Mustafa V. Onat, M.D., Belchertown State School, Belchertown, Mass., age 30, Istanbul University, Turkey, 1949, available September, 1956, (interest in Anesthesiology).

*Robert C. Patten, M.D., 3615th USAF Hospital, Craig AFB, Alabama, age 29, Cornell University Medical College, 1954, active military duty, available August, 1957, (interest in minor surgery, pediatrics and obstetrics).

Donald E. Potts, M.D., Triangle Trailer Camp, Jacksonville, N. C., age, medical school and availability unknown.

*Julian S. Sachs, M.D., 2122 Massachusetts Avenue, N. W., Washington, D. C., age 36, Faculty of Medicine, University of Geneva, Switzerland, 1954, veteran, available December, 1956.

C. Sargent, M.D., 1825 New York Avenue, Manitowoc, Wisconsin, age, medical school and availability unknown.

*Leonard H. Spiegelmann, M.D., 3310th USAF Hospital, Scott Air Force Base, Illinois, age 34, French Faculty of Medicine, Beirut-Lebanon, 1946, active military duty, available February 17, 1957, (interest in surgery).

*James W. Stackpole, M.D., 619 Langdon Street, Madison, Wisconsin, age 28, University of Vermont, 1956, veteran, available July 30, 1957.

*Lawrence C. Webb, M.D., Warren, Indiana, age 31, Jefferson Medical College, 1954, veteran, available December, 1956.

INTERNAL MEDICINE

*Donald H. Gent, M.D., 106 Hopkins Street, Athena, Pa., age 30, College of Physicians & Surgeons, Columbia University, 1952, veteran, available July, 1957.

*David S. Greenbaum, M.D., 470 North Broadway, Yonkers, N. Y., age 33, Western Reserve University Medical School, 1947, veteran, available about August or September, 1957.

*Bennett P. Lustgarten, M.D., 442 East 20th St., New York 9, N. Y., age 29, New York University, Bellevue Medical Center, College of Medicine, 1953, veteran, two and one-half years residency in Internal Medicine and Hematology, available July, 1957.

*Alfred Lazarus, M.D., 251 South 41st Street, Philadelphia 4, Pa., age 30, University of Buffalo School of Medicine, 1952, veteran, available July 1, 1957, (interest in Gastro-enterology).

Arthur Sanders, M.D., State University of Iowa, Uni-

versity Hospitals, Dept. of Internal Medicine, Iowa City, Iowa, age 30, Medical College of Virginia, 1953, veteran, available July, 1957.

Chester M. Thompson, M.D., Box 50, McGuire VAH, Richmond 19, Va., age, medical school and availability unknown.

OBSTETRICS-GYNECOLOGY

*Guido R. Gianfranceschi, M.D., 502 Glen Allen Dr., Baltimore 29, Maryland, age 35, McGill Medical School, 1948, veteran, available since October, 1956.

*Herbert K. Speers, M.D., 7746 B. Lucretia Mott Way, Elkins Park 17, Pa., age 33, Ohio State University, 1949, four-year residency in Ob-Gyn, veteran, available July 1, 1957.

*Walter F. Tauber, M.D., Greenpoint Hospital, Kingsland Ave., Brooklyn 11, N. Y., age 30, State University of New York, Downstate, 1952, veteran, available July, 1957.

OTOLARYNGOLOGY

*Joseph C. Elia, M.D., Veterans Adm. Hospital, West Haven, Conn., age 46, Hahnemann Medical College, 1936, veteran, available since August, 1956, (interest in Allergy).

PEDIATRICS

Herbert L. Cole, M.D., 3020 Edwin Ave., Fort Lee, N. J., age, medical school and availability unknown.

PLASTIC SURGERY

*Milton Lu, M.D., Veterans Adm. Hospital, Newington, Conn., age 36, College of Medicine, West China Union University, 1945, Board qualified in Plastic Surgery, available immediately.

SURGERY

*Joseph Berke, M.D., 1394 President Street, Brooklyn 13, N. Y., age 34, New York Medical College, 1947, veteran, available immediately (will do general practice).

*Richard A. Currie, M.D., 2818 Virginia Road, Augusta, Georgia, age 31, McGill University, 1948, Board qualified in General Surgery, active military duty, available April 15, 1957.

*George J. Digman, M.D., 3926 Lewis Avenue, Erie, Pa., age 40, University of Buffalo, 1943, Board eligible in General Surgery and Thoracic Surgery, available January 1, 1957.

James C. Fahl, M.D., 1451 Third Ave., S. W., Rochester, Minnesota, age unknown, Harvard Medical School, availability unknown.

Richard E. Kuhn, M.D., 1 Belmont Avenue, Clifton, New Jersey, age unknown, Board eligible in General Surgery, military status and availability unknown.

*James C. Ling, M.D., Veterans Adm. Hospital, Butler, Pa., age 42, Peiping Union Medical College, Peiping, China, 1940, available any time.

Continued on page 65



DEAN H. FISHER, M.D.
COMMISSIONER

State of Maine

Department of Health and Welfare

Division Of Services For The Blind

DEAN P. MORRISON, *Director*

The first provision for blind individuals was made by the State of Maine in 1834 when a law was passed to provide for education of blind children to attend Perkins Institute and Massachusetts School for the Blind in Watertown, Massachusetts.

The next provision for the blind was passed in 1915 when financial aid was authorized to the extent of \$200 per year for any blind person who had lived in Maine for ten consecutive years and who had an income of less than \$300 a year.

With the passage of the Social Security Act of 1935 came Aid to the Blind as it is known today, and as it is administered by the Division of Public Assistance.*

The 90th Legislature in 1941 passed an amendment to the Aid to the Blind Act creating the Division of Services for the Blind within the Department of Health and Welfare. The objectives of this Division are "to provide, or cooperate with other public agencies in providing, a program of services for the blind, including the prevention of blindness, the locating of blind persons, medical services for eye conditions, vocational guidance and training of the blind, the placement of blind persons in employment, assistance to the blind in marketing the products of their home industries, the instruction of the adult blind in their homes and other social services to the blind." A sum of \$5,000 was appropriated for each fiscal year of the biennium. The Division started to function in March, 1942 with the appointment of a supervisor and a part-time secretary.

Thus followed the usual pattern — education, maintenance, and finally prevention and total rehabilitation for blind persons.

The attention of the medical profession is specifically

directed to one problem in the prevention of blindness and vocational rehabilitation.

Statistics indicate that four million Americans, including 109,000 children, are suffering from some degree of amblyopia which could have been prevented. Some of the children will suffer loss of their only good eye through injury or disease, or this loss may come after one has a family and result in loss of job and economic dependence in addition to blindness. Few people ever prepare themselves for blindness.

Why is it so difficult to discover children's eye problems? Since a good eye covers up for its faulty fellow and the presence of side vision in the poor eye keeps the child from bumping into things, it is assumed that both eyes are functioning well. As each eye receives its own impression or image, and as the sensation of "seeing double" is intolerable, nature has provided a mechanism by which the mind blends these two images into one. This results in binocular vision and is the principle on which 3-D pictures are based.

If something upsets the delicate balance and close cooperation between the two eyes, there is the danger that one eye may do all the work of seeing while the central image of the other eye is ignored. The most common cause of this condition is faulty alignment of the eyes; that is, one eye is turned inward or outward with respect to the other. Since the eyes are looking in two different directions, the child can escape the annoyance of seeing double only by mentally shutting out the image of one eye. Unless treatment is started at once, this eye will never learn clear vision. Treatment can be started as early as the first year of life, or as soon as the need for it is discovered. Patching must be constant and complete until vision has been brought to a near normal level in the poorer eye; only then is it permissible to omit the patch for a part of each day. Supervision by the eye specialist is essential, but the responsibility for carrying out the program rests with the parents.

*This is the categorical program of financial aid in the form of money grants for eligible needy blind persons. Although it differs in its major objective from the Division of Services for the Blind, the subject of this article, there is continuing cooperation between staff members working on cases in which medical services or vocational rehabilitation are indicated.

The first few days are the most difficult; as soon as clear vision starts to develop in the faulty eye, the patch is increasingly well-tolerated. The older the child, the slower is the response to treatment and an eye that has not developed clear vision before the age of seven is unlikely to do so thereafter. Failure to achieve any improvement at all may be due to eye disease, advanced age of child, improper glasses, or half-hearted, inadequate attempts at patching.

Children who are obviously cross-eyed or walleyed are usually brought under treatment at an early age. In many others, however, the deviation or cast may be so slight as to escape detection by all but a trained examiner.

Another group are those whose eyes are straight but who have an optical imperfection of one eye. Since the distorted picture received by this eye cannot be reconciled with the clear image of the normal eye, the natural tendency is to shut out the blurred image entirely. In many cases, the prescription of suitable glasses at an early age is sufficient to insure normal development of both eyes instead of only one.

The general practitioner and the pediatrician can test vision in children too young to read letters by means of picture charts. The essential thing is that each eye must be tested separately. Unequal vision in a child's eyes is a red flag of danger. Vision testing should be done as early as possible and at intervals until the family physician and the parents are satisfied that the child has equally good vision in both eyes.

Vocational rehabilitation of legally-blind persons and vocational rehabilitation of the visually-handicapped are responsibilities of the Division of Services for the Blind.

A legally-blind person is one who has visual acuity of 20/200 or less in the better eye with correcting glasses or with a field defect in which the peripheral field has contracted to such an extent that the widest diameter of the visual field subtends at an angular distance of no greater than 20°.

A visually-handicapped person is one whose vision in the better eye with correcting glasses is 20/70 or less or is greater than 20/200.

The basic requirements of eligibility for vocational rehabilitation are as follows: (1) the presence of a physical or mental disability and the resulting functional limitations or limitations in activities; (2) the existence of a substantial handicap to employment caused by limitations resulting from such disability; (3) a reasonable expectation that vocational rehabilitation services may render the individual fit to engage in a remunerative occupation.

The term "vocational rehabilitation" means: "diagnostic and related services (including transportation) incidental to the determination of eligibility for and the nature and scope of services to be provided; training, guidance and placement services for physically-handicapped individuals; and, in the case of any such individual found to require financial assistance with re-

spect thereto (after full consideration of his eligibility for any similar benefit by way of pension, compensation, and insurance), any other goods and services necessary to render such individual fit to engage in a remunerative occupation (including remunerative homebound work), including the following physical restoration and other goods and services:

"(1) corrective surgery or therapeutic treatment necessary to correct or substantially modify a physical or mental condition which is stable or slowly progressive and constitutes a substantial handicap to employment, but is of such a nature that such correction or modification may reasonably be expected to eliminate or substantially reduce such handicap within a reasonable length of time;

"(2) necessary hospitalization in connection with surgery or treatment specified in paragraph (1);

"(3) such prosthetic devices as are essential to obtaining or retaining employment;

"(4) maintenance, not exceeding the estimated cost of subsistence, during rehabilitation;

"(5) tools, equipment, initial stocks and supplies (including equipment and initial stocks and supplies for vending stands), books, and training materials, to any or all of which the state may retain legal title; and

"(6) transportation (except where necessary in connection with determination of eligibility of nature and scope of services) and occupational licenses. Such terms also include —

"(7) the acquisition of vending stands or other equipment and initial stocks and supplies for use by severely-handicapped individuals in any type of small business, the operation of which will be improved through management and supervision by the State agency; and

"(8) the establishment of public and other non-profit rehabilitation facilities to provide services for physically handicapped individuals and the establishment of public and other nonprofit workshops for the severely-handicapped."*

Financial need must be present before the following services are provided:

Medical, surgical, psychiatric and hospital care

Artificial appliances

Maintenance and transportation

Occupational tools, equipment, and licenses, as necessary

Medical diagnostic services, guidance, counseling, training and placement services, as well as follow-up for job adjustment, are not based on financial need.

The general practitioner can be a great help in evaluating the total medical needs of the vocational rehabilitation client as many times blindness is not the determining factor in the client's total rehabilitation plan.

*Public Law 565, Chapter 655, Section 11, 1955.

Staff Changes Of Interest To Physicians

Recent staff changes of particular interest to the medical profession are the addition of three consultants to strengthen the services of the three tuberculosis sanatoria and the appointment of a new Child Welfare Director.

The following consultants, with headquarters in Augusta, will serve all three of the State's sanatoria: the Central Maine at Fairfield, Western Maine at Hebron and Northern Maine at Presque Isle.

Miss Madelyn Kearney, who has recently completed a year's scholarship at the famous Rusk Rehabilitation Institute in New York City, has returned to State service as a medical social work consultant. She will work with patients now in the institutions, patients who have been discharged, and the staff of each of the sanatoria. Miss Kearney, who was in the U. S. Navy in World War II, was a welfare worker for eight years before she became associated with the State tuberculosis program in 1954. She has the supervisory responsibility of developing medical social service programs in all three sanatoria.

Miss Mary Morse of Bangor, formerly chief dietitian at the Eastern Maine General Hospital, and later a dietitian with the Department of the Air Force at Dow Air Force Base, is now dietary consultant for the three State sanatoria. She was educated at Lesley School in Cambridge, Massachusetts, and received a Bachelor of Science degree in institutional management at Drexel Institute of Technology in Philadelphia. She has general supervision of the food services in the sanatoria.

Consultant services in various phases of administration have been assigned to Miss Frances Crimmin, R.N., of Hallowell, who took advanced work at Simmons College and Boston University after receiving her R.N.

degree. She has been a hospital administrator at Presque Isle and at the Augusta General Hospital and served in the U. S. Air Force in World War II. She works in all three sanatoria to assist in solving administrative problems.

The numerous physicians who have occasion to work with children committed to the custody of the State by the courts will be interested in the selection of Miss Mary L. Buss as Director of the Division of Child Welfare. Miss Buss, who has already assumed her new duties, is a graduate of Colby College and has been an executive in the Rhode Island Child Welfare Division.

She comes to Maine with a background of graduate work at Boston University and a Master's degree from the University of Chicago School of Social Service Administration. Miss Buss was an assistant field director and later an acting base field director for the American Red Cross in the South Pacific area in World War II. Her experience includes a period as a psychiatric social worker at a veterans administration hospital before continuing her career as a child welfare executive with the Rhode Island Agency. Miss Buss is Maine's second Child Welfare Director in the twenty-year period during which the Division has functioned. Children who are in the custody of the State receive full care as wards of the Department of Health and Welfare and this includes medical and dental expense as well as hospitalization when necessary. In addition to the full responsibility for the care and custody of these children (approximately 2,100), the Division does service casework to prevent the necessity of such commitments, places children in adoptive homes and works with community officials for the protection of children.

Across The Desk

Continued from page 62

Louis H. Stein, M.D., 134 Longview Avenue, White Plains, New York, age unknown, four-year residency in General Surgery, availability unknown.

William F. Thompson, M.D., Veterans Adm. Hospital, Rutland Heights, Mass., age, medical school and availability unknown.

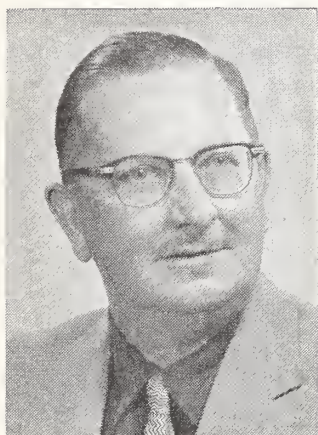
Russell G. Williamson, M.D., 22 Bramhall St., Port-

land, age 30, Tufts University Medical School, 1951, veteran, available July 1, 1957.

UROLOGY

Waleed G. Maloof, M.D., 286 Wadsworth Avenue, New York 33, N. Y., age and medical school unknown, Board eligible in Urology, available June, 1957.

Presidents and Secretaries of County Medical Societies



Clyde I. Swett, M.D.

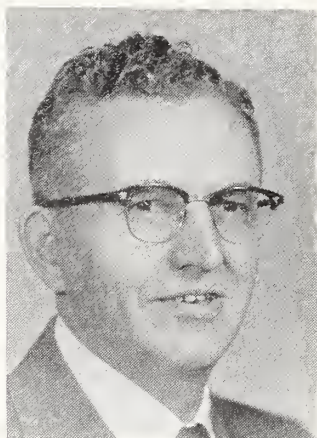
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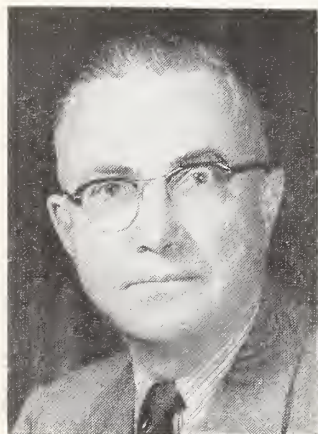
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Ralph C. Stuart, M.D.

Guilford

President
Piscataquis County
Medical Society



County Society Notes

On this page the Journal publishes the second in a projected series of photographs of the Presidents and Secretaries of the County Medical Societies. Pictures of newly-elected officers who have replaced those already published, will be included as soon as they are received in this office.

LINCOLN-SAGADAHOC

January 15, 1957

The Annual Meeting of the Lincoln-Sagadahoc County Medical Society was held at the Ledges Inn, Wiscasset. There were thirteen members and guests present.

The meeting was called to order by the President, Joseph I. Smith, M. D., of Bath.

The following officers were elected for 1957:

President, Stanley R. Lenfest, M.D., Waldoboro

Vice-President, Harry M. Wilson, M.D., Bath

Secretary-Treasurer, George W. Bostwick, M.D., New-castle

Delegates to the Maine Medical Association House of Delegates: John F. Dougherty, M.D., Bath, John F. Andrews, M.D., Boothbay Harbor. Alternates: Ralph C. Powell, M.D., Damariscotta, Edward L. Kinder, Jr., M.D., Bath.

Board of Censors: Everett D. Schubert, M.D., Wiscasset, Hamdi Akar, M.D., Bath, Arthur H. Sampson, M.D., Damariscotta.

The delegates reported on the special meeting of the House of Delegates of the M.M.A. A discussion of Blue Shield plans followed and the members advised that a brochure will accompany the January Blue Shield checks. The March meeting of the Society will be devoted to a discussion of these new plans.

Robert W. O'Connor, of Locke, Campbell, Reid and Hebert, Legal Counsel for the Maine Medical Association, discussed Legal Medicine.

EVERETT D. SCHUBERT, M.D.
Secretary

PENOBSCOT

January 15, 1957

The January meeting of the Penobscot County Medical Association was held at the Penobscot Valley Country Club.

Carl E. Blaisdell, M.D. of Bangor, President, presided. Proposed changes in the constitution and by-laws presented by Richard C. Wadsworth, M.D., Bangor, were approved. Resolutions on the death of Manning C. Moulton, M.D., were read and adopted. The Association approved the Polio Clinic at the Eastern Maine General Hospital.

Joseph Stokes, III, M.D., of Boston, was the speaker of the evening. Dr. Stokes's address, "Smoking and Lung Cancer," was illustrated with lantern slides.

The following officers were elected for 1957:

President, John J. Pearson, Jr., M.D., Old Town

President-elect, J. Robert Feeley, M.D., Bangor

Secretary, Warren G. Strout, M.D., Bangor

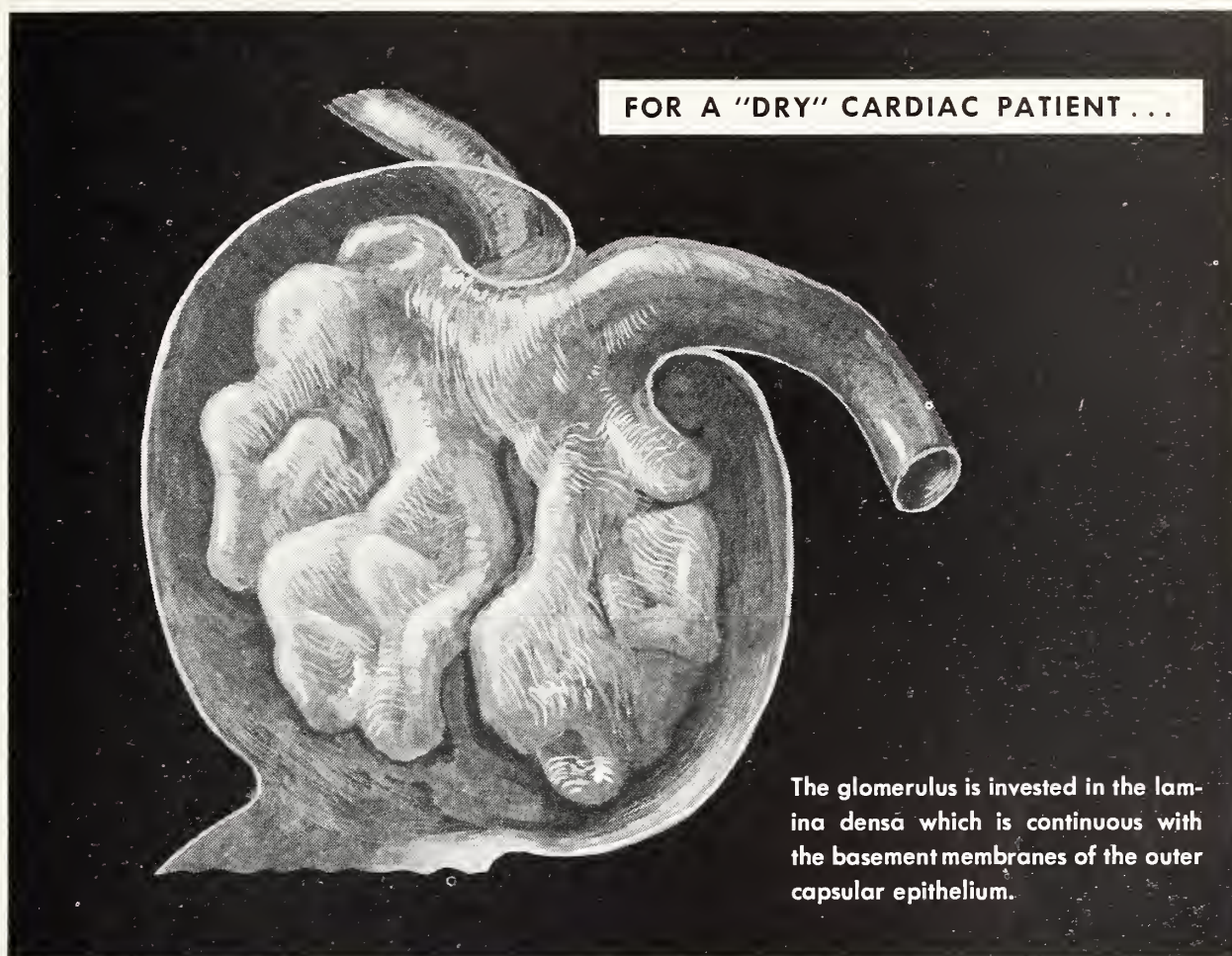


Illustration by Hans Elias

Rolicton[®] Diuresis Maintains Continuous Edema Control

The efficacy of Rolicton (brand of amiso-metradine) in maintaining diuresis in the edematous patient has been established on an average dosage of one tablet b.i.d. Larger doses may be given as initial therapy and as maintenance therapy in edema difficult to control. Many patients will respond to one tablet daily.

"The margin of safety and the diuretic index is certainly an improvement over the use of oral mercurial diuretics."¹

Avoiding "Peaks and Valleys"

A highly desirable effect, and one which has been made possible with Rolicton, is the maintenance of continuous diuretic effectiveness day after day over an extended period, to avoid the up-and-down weight pattern typical of other edema-control methods.

"There was an obvious stabilization of weight in practically all of the patients under observation, and previous wide fluctuations in poundage disappeared."²

Mercury-Sparing

Typical of the Rolicton diuresis pattern is the ability of the drug to reduce and, in a large percentage of patients, to eliminate the need for mercurials parenterally.

"... the drug represents a most useful addition to our armamentarium in the treatment of edema, not only because it can be given orally ... but more so because it permits [us] to replace or to spare the ... mercurials."³

G. D. Searle & Co., Chicago 80, Illinois.
Research in the Service of Medicine.

1. Asher, G.: Personal communication, June 23, 1956.
2. Settel, E.: A Clinical Evaluation of a New Oral Diuretic, Rolicton. Postgrad. Med., Feb. 1957, in press.
3. Goldner, M. G.: Personal communication, June 29, 1956.

SEARLE

Treasurer, Dexter J. Clough, 2nd, M.D., Bangor
 Councilors: Paul W. Burke, M.D., Newport (one year),
 Albert C. Todd, M.D., Brewer (two years), George
 W. Wood, III, Brewer (three years)
 Delegate to Maine Medical Association House of Dele-
 gates, Wilfred I. Butterfield, M.D., Lincoln.

HERBERT C. SCRIBNER, M.D.
Secretary

HANCOCK

January 9, 1957

Robert F. Russell, M.D., of Penobscot, President of the Hancock County Medical Society, presided at the January meeting which was held at the Hancock House in Ellsworth.

Walter W. Herbert, M.D., of Ellsworth, was elected to membership in the Society.

Mason Trowbridge, Jr., M.D., of Ellsworth, was appointed chairman of the Program Committee.

A motion was passed that the Society recommend to the Maine Medical Association House of Delegates that Charles C. Knowlton, M.D., of Ellsworth, be elected a senior member of the Association.

James H. Crowe, M.D., reported to the Society on the special meeting of the Maine Medical Association House of Delegates.

John A. Woodcock, M.D., of Bangor, the speaker of the evening, gave a very interesting talk on "Common Fracture Problems" which was illustrated with X-ray films of specific cases.

ARTHUR M. JOOST, JR., M.D.
Secretary

WASHINGTON

January 18, 1957

A meeting of the Washington County and St. Croix Medical Societies was held in the Board Room of the Charlotte County Hospital, St. Stephen, New Brunswick on Friday, January 18. Twenty-one members and guests were present.

Hazen Mitchell, M.D., President of the Washington County Medical Society, introduced T. E. Lunney, M.D., of St. John, N. B., Anesthesiologist at the St. John Hospital. Dr. Lunney reviewed the History of Anesthesia and discussed the present-day use of anesthetics in St. John Hospital. The use of muscular relaxants and tracheal intubation and the newer anesthetics has made anesthesia a more exact science. Newer developments in anesthesia have preceded and made possible the great advances in chest and heart surgery. A period of discussion followed this excellent talk. Most of the physicians present asked questions concerning their own particular problems in anesthesia.

After the meeting an excellent roast beef dinner was served at DeMonts Restaurant in Calais.

Mrs. Hazen Mitchell, of Calais, entertained the wives of the members at a buffet supper.

The next meeting will be in Eastport, April 12, 1957.

KARL V. LARSON, M.D.
Secretary

YORK

January 9, 1957

The Annual meeting of the York County Medical Society was held at the Kennebunk Inn, Kennebunk. A social hour was followed by dinner and the meeting.

The guest speaker, Merrill Moore, M.D., of Boston, Massachusetts, gave an interesting and instructive talk on "Psychiatry in General Practice." Colonel Griffith of the Portsmouth Air Base summarized the MediCare program for dependents of the

uniformed federal services. Armand Albert, M.D., President of the Maine Medical Association, gave a short talk pertaining to some of the activities now being undertaken by the Association.

At the business session the following officers were elected for 1957:

President, Marion A. K. Moulton, M.D., West Newfield
 Vice President, William O'Sullivan, M.D., Saco
 Secretary-Treasurer, Charles W. Kinghorn, M.D., Portsmouth, N. H.

Board of Censors: Stephen Cobb, M.D., Sanford, Maurice Ross, M.D., Saco, Louis Lesieur, M.D., Saco

Delegates to Maine Medical Association House of Delegates: Roger J. P. Robert, M.D., Saco, Carl Richards, M.D., Sanford, James H. Macdonald, M.D., Kennebunk. Alternates: William Roussin, M.D., Biddeford, Melvin Bacon, M.D., Sanford, Robert Ficker, M.D., Kennebunkport

Board of Resolutions: William E. Dionne, M.D., Springvale, Alexander W. Magocsi, M.D., York, J. Robert Downing, M.D., Kennebunk

Publicity: Frank W. Barden, M.D., Biddeford

Auditing: Stephen A. Cobb, M.D., Melvin Bacon, M.D.

Nominating Committee: Roger J. P. Robert, M.D., Chairman, William Roussin, M.D., Marcel Houle, M.D., Biddeford

Payson Jacobson, M.D., of Biddeford, and Kenneth Leigh, M.D., of York, were elected to membership. Dr. Richards read the new Blue Shield fee schedule which was discussed by the members.

The next meeting will be held at the Henrietta Goodall Hospital in Sanford on March 13, at 2 p.m. Drs. Bacon and Richards will be in charge of the program.

Twenty-three members and five guests were present.

Members: Melvin Bacon, M.D., K. J. Cuneo, M.D., J. R. Downing, M.D., R. F. Ficker, M.D., C. M. Haas, M.D., P. S. Hill, Jr., M.D., A. A. Hoffman, M.D., M. P. Houle, M.D., P. B. Jacobson, M.D., C. W. Kinghorn, M.D., Kenneth Leigh, M.D., L. C. Lesieur, M.D., J. H. Macdonald, M.D., A. W. Magocsi, M.D., W. F. Mahaney, M.D., M. A. K. Moulton, M.D., J. C. Myer, M.D., C. C. Richards, M.D., R. J. P. Robert, M.D., R. D. Vachon, M.D., L. A. Viger, M.D., R. L. Whitney, M.D., E. P. Wolfahrt, M.D.

Guests: Armand Albert, M.D., Helene Bulley, Martha Felch, Colonel Griffith, USAF, Merrill Moore, M.D.

CHARLES W. KINGHORN, M.D.
Secretary

NEW MEMBERS

ANDROSCOGGIN

John W. Carrier, M.D., Central Maine General Hospital, Lewiston

AROOSTOOK

Arthur G. Carton, M.D., Houlton
 Charles H. St. Pierre, M.D., Van Buren

HANCOCK

Walter W. Herbert, M.D., Ellsworth

YORK

Kenneth E. Leigh, M.D., Court and Fleet Streets, Portsmouth, New Hampshire

DECEASED

FRANKLIN

Elmer J. Brown, M.D., 81 Main Street, Farmington

KNOX

Ralph W. Dennen, M.D., 20 School Street, Tenants Harbor, on January 15, 1957.

Tuberculosis Abstract

ISONIAZID ALONE WAS GIVEN TO TWENTY-THREE PATIENTS WITH TUBERCULOSIS ADENITIS with a good response. This initial report emphasizes the author's belief that the adenitis is just one manifestation of this systemic disease and that surgical excision is rarely indicated. The drug was given for eighteen months in most instances. "Every effort to insure maximal amount of rest," though there was no instance of active pulmonary disease. There was striking improvement in three months and relapse occurred in only two.

*Tuberculosis Adenitis. Katherine Butler, *Am. Rev. of Tuberculosis and Pulmonary Diseases*, 74, 136, July 1956.

Announcements

Tenth Annual Connecticut Cancer Conference for Physicians

Hotel Statler, Hartford

WEDNESDAY, MARCH 13, 1957 — 12:45 TO 5:00 P.M.

P R O G R A M

12:45 P.M. REGISTRATION

1:00 P.M. A CHALLENGE FOR 1957

Edward J. Ottenheimer, M.D., President, American Cancer Society, Connecticut Division

Presiding: Bernard F. Mann, Jr., M.D., Associate Pathologist, Hospital of St. Raphael, New Haven, Program Chairman

1:10 P.M. INTRA-ORAL AND PHARYNGEAL NEO- PLASMS — A Symposium

Moderator: Colonel James E. Ash, M.D., U. S. Army Medical Corps, Retired, Washington, D.C.; former Scientific Director of the American Registry of Pathology and Armed Forces Institute of Pathology; Pathologist, Suburban Hospital Association, Bethesda, Maryland

CLINICAL BACKGROUND AND DIAGNOSTIC ASPECTS

Henry P. Royster, M.D., Associate Professor of Surgery, University of Pennsylvania, School of Medicine; Consultant Plastic Surgeon, Philadelphia

PATHOLOGIC CONSIDERATIONS

Colonel James E. Ash, M.D.

ROLE OF RADIATION THERAPY

Gilbert H. Fletcher, M.D., Chief, Department of Radiology, University of Texas; Director of Radiation Therapy, M.D. Anderson Hospital and Tumor Institute, Houston, Texas

ROLE OF SURGERY

Grant E. Ward, M.D., Associate Professor of Surgery and Surgeon in charge of Tumor Clinic, Johns Hopkins University School of Medicine, Baltimore

2:30 P.M. INTERMISSION

3:00 P.M. CONTINUATION OF THE SYMPOSIUM

3:40 P.M. OPEN FORUM

Written questions are invited. Question cards may be obtained at the registration desk.

Postgraduate Credit: Members of the Academy of General Practice may receive postgraduate credit for attending this conference.

Sponsored by: CONNECTICUT STATE MEDICAL SOCIETY
CONNECTICUT DIVISION, AMERICAN CANCER SOCIETY
ASSOCIATION OF CONNECTICUT TUMOR CLINICS
CONNECTICUT STATE DEPARTMENT OF HEALTH

Medical Program Combines with South Dakota Pheasant Hunting

The Hunter's Fall Medical Meeting sponsored by the South Dakota State Medical Association will be held at Mitchell,

South Dakota during the first five days of pheasant hunting season in October, 1957.

The program is set up for out-of-state doctors and will feature morning scientific sessions, afternoon hunting and evening scientific and social sessions.

The registration fee is set at \$100.00 which will cover the out-of-state hunters license, hunting guides, reserved hunting areas, several social events, and the scientific program. Motel and hotel space has been reserved, but registration is limited to the available housing.

The affair is not stag, but wives who hunt must pay the full registration fee and those not hunting, three-fourths of it. (This is necessitated by the tight housing situation.)

For details and reservations write to Mr. John C. Foster, Executive Secretary, South Dakota State Medical Association, 300 First National Bank Building, Sioux Falls, South Dakota.

Another Record-Breaking Year for American Medical Education Foundation

The American Medical Education Foundation has just completed its fifth year of operation with a record total of \$1,072,717 in contributions.

This figure represents a 41 per cent increase over last year's total of \$757,163.29 with the \$125,000 grant to the Foundation made by the American Medical Association at the Clinical Meeting in Seattle, or an increase of 25.1 per cent not considering the added generosity of the A.M.A.

The \$125,000 was in addition to an original gift of \$100,000 voted by the Board of Trustees earlier in the year. Grants to the country's 83 medical schools will be made later in the month after final computations have been completed.

The success of the Foundation can be attributed directly to the hard work and foresighted planning of the State Chairmen who have given so much of their energies to AMEF in 1956. Because of these efforts, we have every reason to believe that 1957 will be an even greater year.

Doctor-Lawyer Meeting Scheduled for Philadelphia

The American Medical Association has invited doctors and lawyers in New England and the Eastern States to a medico-legal symposium at the Benjamin Franklin Hotel in Philadelphia, March 29 and 30.

"Medicine and the law must work together so frequently that we feel open discussions of mutual problems would be of great assistance to the two professions," said C. Joseph Stetler, Director of the American Medical Association's Law Department, in announcing the meeting.

The Philadelphia symposium, which is one of a series of three meetings to be held during March in various sections of the United States, will feature such subjects as trauma and disease, medical expert testimony and the medical witness. In addition, a mock trial demonstration will take up the introduction in court of chemical tests for intoxication.

Registration fee for the meeting is \$5.00. This will cover the cost of a luncheon session and a copy of any proceedings that are published. Advance interest in the symposium is so great that early registrations are advisable.

Applications for attendance, together with the registration fee, should be sent to the Law Department, American Medical Association, 535 North Dearborn, Chicago 10, Illinois.

Other meetings in the current medicolegal series will be held in Atlanta, March 15-16 and in Denver, March 22-23.

Bahamas Branch of the British Medical Association to Hold Medical Conference in Nassau

April 23 to 30, 1957

This Conference will be held at the British Colonial Hotel and the Princess Margaret Hospital in Nassau. Lectures will be given from 9:30 to 11:00 a.m. and 5:30 to 7:00 p.m. There will also be two evening lectures, two meetings at the hospital, and two evening social gatherings.

The British Colonial Hotel has offered special rates for the participants of this Conference and their wives:

Modified American Plan: Two persons in one room, \$30.00 for room, breakfast and dinner, per day, for two.

One person in one room, \$20.00 for room, breakfast and dinner, per day, for one.

Hotel reservations should be made as early as possible by writing (airmail ten cents postage from the United States or Canada) *directly* to Mr. Robert K. Holiday, Reservations Manager, British Colonial Hotel, Nassau, Bahamas, and by sending at the same time the registration fee of \$75.00.

There are direct non-stop flights to Nassau from New York and from Miami on Pan American Airways and on British Overseas Airways.

The usual official certificate of attendance for U. S. income tax purposes will be issued to the participants in the Conference.

The National Society for Crippled Children and Adults

Twenty fellowships for specialized training in working with cerebral palsied and other severely-handicapped persons are available, according to a recent announcement by Dean W. Roberts, M.D., executive director of the National Society for Crippled Children and Adults.

With a deadline of March 15, 1957, set for receipt of applications, Dr. Roberts urged qualified counselors and placement workers in public and private agencies interested in vocational problems of the crippled to apply immediately for fellowships for the four weeks' training course. The training will be held June 17 to July 12 at the Institute of Physical Medicine and Rehabilitation of the New York University-Bellevue Medical Center.

These fellowships, co-sponsored by the National Society, also known as the Easter Seal Society, and Alpha Gamma Delta, International Women's Fraternity, will amount to \$300 each covering tuition and a moderate amount of living expenses. Six points of academic credit at the graduate level will be given to those who successfully complete the course.

Selection of persons to receive these fellowships will be made on the basis of an evaluation of candidates with the highest qualifications who are working for schools, agencies, business or industry who are able to make a contribution toward effective counseling and placement for the handicapped.

The course will give emphasis to the team approach in the rehabilitation of the physically handicapped and will include lectures and demonstrations by members of the staff of the Institute of Physical Medicine and Rehabilitation, New York University School of Education, and other specialists in this field.

To carry out the course, program facilities of the Institute of Physical Medicine and Rehabilitation, hospitals, rehabili-

tation centers, vocational and specialized training facilities, and sheltered workshops in the New York area will be utilized.

Application blanks can be obtained from the National Society for Crippled Children and Adults, 11 S. LaSalle Street, Chicago 3, Illinois.

Gill Memorial Eye, Ear and Throat Hospital Thirtieth Annual Spring Congress

The Gill Memorial Eye, Ear and Throat Hospital, the pioneer institution in refresher courses in this country, announces the Spring Congress in Ophthalmology and allied specialties. The meeting will be held April 1st, through April 6th, 1957, at the Patrick Henry Hotel, in Roanoke, Virginia.

The object of this program is to give, in a brief period of time, a series of lectures and demonstrations on subjects of interest to all practitioners of ophthalmology and otolaryngology. It is not intended to prepare men for the practice of the specialties, but to give those who are prepared, and are in practice, a new impetus for further study and investigation, and to offer all in attendance the benefits of the experience of others in the fields covered.

The subjects will be presented by men of national and international reputations, who possess the highest academic standing, together with a practical background of private and clinical practice. The recent advances and accepted methods of treatment in these specialties will be presented by means of clinical lectures, lantern slides, motion pictures and surgical demonstrations.

For further information write: E. G. GILL, M.D., Box 1789, Roanoke, Virginia.

Academy of Medicine of Cincinnati Centennial Exposition and Health Show

The Academy of Medicine of Cincinnati cordially invites all physicians, their families, and their patients to its 100th Birthday Party, February 27 through March 5, 1957. In order to officially observe the occasion, a Health Museum and Exposition will be established in Cincinnati's spacious and historic Music Hall. One hundred and seventy-five health and scientific exhibits, representing medicine, hospitals, research centers, public health, nursing, pharmacy and industry will be displayed in the north and south halls. Notable among these exhibits and occupying some 4,000 square feet of space, will be an atomic energy exhibit from the American Museum of Atomic Energy entitled "Atoms for Peace."

In the main foyer of the hall, "Juno," a full-sized, activated manikin, graciously loaned for the occasion by the Dominican Republic, will be on display. Juno is operated electrically, and with concurrent recorded narration, will demonstrate blood vessels, bones and organ structures of the body.

The ribbon cutting ceremony for the Centennial Exposition will be conducted by the Honorable William O'Neil, Governor of the State of Ohio, at 9:00 a.m. on Wednesday, February 27, 1957.

Paul D. White, M.D., and Walter Alvarez, M.D., noted medical scientists and authors, have accepted invitations to be among the distinguished guest speakers.

The Centennial Convocation will be held on the last night of the Exposition, March 5, 1957. The Convocation address will be given by Sir Edward Appleton, Nobel Laureate, Edinburgh, Scotland, and civic leaders, officials of both the American and State Medical Associations, and Government dignitaries will take part in the elaborate ceremonies.

Professor Reginald McGrane, Chairman of the Department of History, University of Cincinnati, has prepared a one hun-

dred year history of the Academy of Medicine, entitled "The Doctor's Forum." Copies of this volume will be available at the Centennial Exposition.

The Cincinnati Journal of Medicine also is preparing a special Centennial Edition for the occasion.

It is anticipated that 500,000 people will be on hand at the Music Hall as an assurance that the Academy of Medicine's Centennial observation will be an historic event.

The program will include an exhibit of the Ohio Valley Civil Defense Authority illustrating a typical 200-bed emergency hospital.

The Civil Defense exhibit to occupy 1600 square feet in the South Hall of Music Hall is planned as one of the civic interest features of the week-long Health Show.

The exhibit which along with the entire Centennial Exposition's 175 booth unit attractions will be free to the public has been obtained from the national Civil Defense authority for showing in Cincinnati.

The exposition will be open daily 10 a.m. to 10 p.m.

In an effort to supplement existing hospital facilities in target cities throughout the country, the Federal Civil Defense Administration has developed a two-hundred (200) bed emergency hospital unit that can be set up in a building or used as a field unit.

Costing \$22,500.00 the hospital features ten (10) wards of twenty (20) beds each; a laboratory; three (3) complete operating rooms; X-ray; sterilizing rooms; a pharmacy and central supply section complete with supplies sufficient for a thirty-six (36) to forty-eight (48) hour operation..

Stored in warehouses throughout the country and away from critical targets, these hospitals with supplies can be loaded in two large vans and rushed to disaster areas and be in operation five hours after arrival.

Set up in outlying areas, the hospitals would provide working facilities for doctors and nurses evacuated from the regular hospitals in the Cincinnati target area.

Seventh International Cancer Congress London, England, July, 1958 Sponsored by The International Union Against Cancer

The Seventh International Cancer Congress will be held in London, England, July 6-12, 1958 under the Presidency of Sir Stanford Cade. Congress headquarters will be The Royal Festival Hall.

There will be two main sessions of the Congress:

A. Experimental

B. Clinical and Cancer Control

Special emphasis will be placed on Hormones and Cancer, Chemotherapy, Carcinogenesis and Cancer of the Lung.

Proffered papers will only be considered if submitted with an accompanying abstract (not over 200 words) before October 1957 and if dealing with new and unpublished work.

The registration fee for the Congress will be L10 (ten pounds) or \$30 (thirty dollars) and the latest date for registration without late fee will be January 1, 1958.

Registration forms and a preliminary program will be available early in 1957 on application to

The Secretary General
Seventh International Cancer Congress
45 Lincoln's Inn Fields
London, W. C. 2, England

J. H. Maisin, President
Union Internationale Contre Le Cancer
Voer des Capucins, 61
Louvain, Belgium

Harold Dorn, Secretary-General
Union Internationale Contre Le Cancer
National Institute of Health
Bethesda 14, Maryland USA

SOME ASPECTS OF INTRA-UTERINE FETAL ANOXIA — *Continued from page 55*

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Coming Meetings

**Maine Medical Association — 10th Annual Session
The Samoset, Rockland — June 23, 24, and 25, 1957**

**American Medical Association — Annual Meeting
New York — June 3-7, 1957**

Officers of the Maine Medical Association

1956-1957

President, ARMAND ALBERT, M.D., Van Buren

President-elect, FRANCIS A. WINCHENBACH, M.D., Bath

<i>Councilors</i>	<i>District</i>	<i>Term Expires</i>
EUGENE E. O'DONNELL, M.D., Portland	First District; Cumberland, York	1957
ALCID F. DUMAIS, M.D., Lewiston	Second District; Androscoggin, Franklin, Oxford	1957
ROBERT L. ALLEN, M.D., Rockland	Third District; Knox, Lincoln-Sagadahoc	1959
WILSON H. MCWETHY, M.D., Augusta	Fourth District; Kennebec, Somerset, Waldo	1959
RAYMOND E. WEYMOUTH, M.D., Bar Harbor	Fifth District; Hancock, Washington	1958
ALLAN WOODCOCK, M.D., Bangor	Sixth District; Aroostook, Penobscot, Piscataquis	1958
PHILIP P. THOMPSON, JR., M.D., Portland	<i>Delegate to the American Medical Association</i>	Jan. 1, 1959
MARTYN A. VICKERS, M.D., Bangor	<i>Immediate Past President</i>	

(*Council Chairman* — EUGENE E. O'DONNELL, M.D.)

Executive Director, DANIEL F. HANLEY, M.D., Brunswick

Secretary-Treasurer, ESTHER M. KENNARD, Brunswick

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The Journal of The Maine Medical Association

Published monthly at Brunswick, Maine, under the direction of the Council

DANIEL F. HANLEY, M.D., Editor

ESTHER M. KENNARD, Business Manager

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No. 3



No. 4



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The Journal of the Maine Medical Association

Volume Forty-Eight

Brunswick, Maine, March, 1957

Number 3

The Milk Alkali Syndrome

Report of a Case and a Discussion of the Role of Potassium Depletion in its Pathogenesis

RALPH ZANCA, M.D.*

In 1949 Burnett et al⁽¹⁾ first described a syndrome characterized by hypercalcemia without hypercalciuria or hypophosphatemia, normal serum alkaline phosphatase level, marked renal insufficiency with azotemia, mild alkalosis; calcinosis manifested especially by an ocular lesion resembling band keratitis, and an improvement in the clinical state of an intake low in milk and absorbable alkali. Since then there have been several case reports,^(2,3,4,5) most of which have stressed the complications of metastatic calcification, nephrocalcinosis, renal calculi and renal failure. However, the early signs and symptoms of this syndrome are easily overlooked and usually the diagnosis is made only when calcinosis, particularly ocular calcification, is noted on examination.

It is the purpose of this paper to present the clinical and laboratory findings of a case which was diagnosed prior to the onset of calcinosis and in which all of the

abnormalities cleared up promptly following treatment. The importance of early recognition and treatment of this condition is stressed by the fact that the renal damage may become irreversible and eventually result in uremic acidosis and death.

CASE REPORT

A 42 year old physician entered the hospital on 7/12/55 with the complaint of severe throbbing headache, generalized weakness, mental confusion, blurring of vision and diplopia, aching in the knees, ankles and wrists and muscular twitchings. About 3 months prior to admission he noted the onset of epigastric distress with a "gnawing" type of mid-epigastric pain post-prandially and nocturnally accompanied by heartburn and nausea. The patient was unable to eat much solid food this time and controlled his pain with Pamine[®] tablets and his heartburn with soda and Alkets.[®]

About 6 days prior to admission, while sailing, he noted the onset of chills, generalized weakness, light-headedness, nausea and frequent vomiting, which he des-

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cribed as being almost projectile. During this time he was exposed to the sun excessively and perspired a great deal. He was unable to retain any solid food and ingested only water, milk, and "coke" — which he frequently vomited. Three days prior to admission he became extremely weak, complained of a severe throbbing headache, chills alternating with periods of feverishness, blurring of vision, diplopia, aching in the knees, ankles and wrists, muscular twitching and hyperirritability. During this time he took considerable amounts of soda and Alkets® for the relief of heartburn.

Past history revealed that the patient had an active duodenal ulcer in March, 1948, proven by x-ray. An x-ray taken in June, 1955, revealed marked deformity of the duodenal cap due to scarring from previous ulceration and an active ulcer crater (0.5 cm.) can be demonstrated on the lesser curvature side at the base of the deformed cap.

Physical examination on admission revealed a well developed male who appeared acutely ill. The blood pressure was 148/80, pulse rate 84 and regular, oral temperature 98.6°F. The patient's skin was dry with loss of turgor, with edema of face, lips and ankles; mucous membranes were dry; tongue was heavily coated. The abdomen was tender to palpation in the mid-epigastric region. The reflexes were hyperactive and equal bilaterally. Gait was wide-based with slapping steps. The muscles were hyperirritable with frequent twitchings.

Results of initial laboratory studies were as follows: 10.8 gms. Hgb.; 3.5 million RBC; 12,300 WBC with 51% polys, 43% lymphs; 6% monos; Hematocrit 36%; NPN 70.2 mg.%; CO₂ 42 meq/l or 93.6 vol.%; Cl 89 meq/l; Na 141 meq/l; K 3.3 meq/l. Urinalysis revealed S.G. 1.008; reaction alkaline; Albumin 10 mg.%; 3-6 wbc/hpf, 0-2/hpf.

On admission the patient was given 1000 cc. 5% D/S with 40 meq. KCl I.V., followed by 1000 cc. 5% D/S with 2 cc. Bejectal® I.V. He was also placed on Maalox®, 1 dram, prn and fluids as tolerated orally. The same I.V.'s were given the following day. The mental confusion subsided the day after admission, but the headache, blurred vision and muscular irritability continued. On the third hospital day, the NPN was 82.9 mg.%; CO₂ 31 meq/l or 69 vol.%; Cl 91 meq/l; Na 144 meq/l; K 5.0 meq/l; Calcium 14.6 mg.%; inorganic phosphorus 2.7 mg.%; stool 2+ guaiac; Sulkowitch test was negative. The I.V.'s were continued for two more days, and during this time the patient was taking fluids orally and eating soft diet. He was also given NH₄Cl, Grams 1, Q.I.D., orally. On the fifth hospital day the NPN was 62 mg.%; CO₂ 31.5 meq/l or 70.2 vol.%; Cl 104 meq/l; Na 140 meq/l; K 4.8 meq/l; urinalysis revealed S.G. 1.011; Albumin 10 mg.%; 0-5 wbc/hpf. The patient at this time was afebrile, the blurring of vision and muscular irritability had subsided. The edema of the face was

subsiding. The headache occurred only occasionally and was relieved by 10 grs. of Empirin®. An x-ray of the abdomen taken at this time did not reveal any abnormal calcification.

On the eighth hospital day the NPN was 47.9 mg.%; CO₂ 27 meq/l or 60 vol.%; Cl 105 meq/l; Na 140 meq/l; K 4.8 meq/l. The patient was now on a convalescent sippy diet and taking fluids well orally. He was asymptomatic. The headache and facial edema had subsided completely and no epigastric distress was noted. By the tenth hospital day the NPN was 41 mg.%; CO₂ 26 meq/l or 58 vol.%; Cl 110 meq/l; Na 140 meq/l; K 4.5 meq/l; the calcium was 11.04 mg.%; inorganic phosphorus 2.7 mg.%. Urinalysis revealed S.G. 1.008 with Albumin 5 mg.%, and 1-2 wbc/hpf. The patient felt well, offered no complaints and was up and about. On the twelfth hospital day the NPN was 27.5 mg.%. A Fishberg concentration test revealed S.G. 1.013 and a PSP test 35% excretion in 1/2 hour with total excretion of 50%. The stool was negative for occult blood. The patient was discharged the following day. Another x-ray taken in September, 1955, revealed no change and no evidence of healing of the ulcer.

DISCUSSION

The case which has just been described corresponds in every important respect to those outlined by Burnett and his co-workers⁽¹⁾ except for the absence of metastatic calcification. The metabolic alkalosis in this case was very pronounced in contrast to previously described cases, and is undoubtedly the reason why this patient's condition was diagnosed early. If not for this fact the patient may have gone on to develop the more serious complications of metastatic calcification and chronic irreversible renal failure. Metabolic alkalosis⁽²⁾ in this case was due to the excessive loss of potassium from the body leading to a rise in extracellular bicarbonate ion concentration. The extracellular potassium ion concentration was only slightly lowered and the extracellular sodium ion concentration was normal. However, the extracellular potassium does not necessarily reflect depletion or repair of intracellular potassium. The excessive vomiting, lack of intake of potassium and excessive intake of alkaline powders all contributed to the depletion of potassium stores and the development of alkalosis. This fact has not been stressed previously and yet is perhaps the most important factor in the development of alkalosis. It is also of importance in the correction of alkalosis since it will not be corrected until the body stores of potassium have been restored.

Renal impairment with azotemia and low fixed specific gravity, albuminuria, occasional granular casts and red and white blood cells is another important feature of this syndrome. Because of this, it must be differentiated from chronic nephritis. However, chronic nephritis is ordinarily associated with hypocalcemia, hyper-

phosphatemia and a metabolic acidosis once azotemia has developed. A history of clear cut renal disease prior to this episode could not be elicited in this case. Also, the rapidity with which renal function improved and azotemia disappeared once milk and absorbable alkalis were withheld constitutes the most striking feature of this syndrome. However, improvement is not always complete and depends on the extent of renal impairment. Initially this is reversible but in the later stages the renal impairment becomes permanent. Hence, the need for early diagnosis is obvious.

There is no complete agreement as to the etiology of this renal impairment. Undoubtedly, vomiting, dehydration, hypochloremia and alkalosis⁽⁷⁾ play a role in the development of renal failure but cannot account for this in most of the cases described since the alkalosis was usually mild. Hypercalcemia⁽⁸⁾ may lead to renal damage as is the case with hyperparathyroidism and hypervitaminosis D, but hypercalciuria and hypophosphatemia and elevated serum alkaline phosphatase are characteristically lacking in this syndrome. It is known that increased calcium intake in normal adults can lead to hypercalciuria⁽⁹⁾ and it has been suggested⁽²⁾ that hypercalciuria may be present early in the course of this syndrome and might initiate tubular calcification thus leading to renal impairment. However, hypocalciuria is usually present in these cases even in the early stages so that some other factor or factors must be responsible for initiating the renal impairment.

Alkalosis, especially when prolonged,⁽¹⁰⁾ may lead to renal impairment regardless whether previous renal insufficiency existed. This renal impairment consists of marked reduction in glomerular filtration rate, effective plasma flow and maximal tubular excretory capacity during the acute episodes. This is usually followed by gradual improvement in renal function following the acute episode. This type of renal insufficiency resembles in some respects lower nephron nephrosis.

Bland⁽⁶⁾ states that alkalosis and potassium deficiency are concurrent disturbances and that when they occur simultaneously, as they frequently do, they may lead to renal impairment and thus perpetuate one another. It must be remembered that normal serum potassium values give no indication of total body potassium depletion, which is known to occur in cases of alkalosis. When such potassium depletion occurs, it may be a significant cause of renal impairment. This has been borne out recently by the work of Schwartz and Relman.⁽¹¹⁾ They have shown that loss of body potassium results in renal and cardiac lesions and that such patients may have a fixed urinary specific gravity which returns to normal with restoration of potassium stores.

Renal biopsy examinations have revealed foamy hydropic degeneration and vacuolar changes of the tubular epithelium. Since there were no other significant disturbances of water and electrolyte balance and no overt signs of malnutrition, these changes were ascribed to

the clinical and physiologic effects of uncomplicated potassium depletion. More recently⁽¹²⁾ Relman and Schwartz have reported on five adult patients with severe chronic potassium depletion who had a renal disorder apparently caused by potassium deficiency only. Only severe hypokalemia was present with no dehydration, sodium depletion or other acid-base disturbance being present. Renal biopsies revealed hydropic and degenerative changes chiefly in the convoluted tubules with no significant glomerular or vascular disease. The BUN and serum creatinine were either normal or only slightly elevated, the PSP excretion was low and all exhibited Pitressin resistant hyposthenuria. Clearances of inulin, endogenous creatinine and PAH were also significantly reduced. Therefore, it seems likely that the renal insufficiency in this patient may well have been due to the potassium induced tubular degenerative lesions associated with potassium depletion. It is also possible that potassium depletion plays an important role in the etiology of the renal insufficiency seen in the Milk Alkali syndrome.

Recovery in this syndrome depends on the reversibility of the renal impairment. In this case the patient became entirely asymptomatic and showed a return to normal renal function. However, when the changes are irreversible then uremic acidosis and death usually ensue. The importance of early diagnosis is stressed.

Treatment of this syndrome consists of correcting all existing abnormalities. A low calcium diet should be instituted and the use of absorbable alkalis discontinued. Alkalosis may subside when alkalis are discontinued, but when severe, such as in this case, then acidifying salts and potassium should be used. The intravenous solution of choice should correct the total water and electrolyte deficit including potassium. Bland⁽⁶⁾ suggests using a solution containing 700 ml. of isotonic saline to which 4 gm. of potassium chloride are added; then add 5% glucose and water to 1000 m. As in other chronic conditions, prevention of this disorder is most important. This can be accomplished by the proper management of peptic ulcer by avoiding the use of absorbable alkalis and excessive calcium intake.

SUMMARY

A case of Milk Alkali Syndrome with marked alkalosis and reversible renal impairment is presented. The various abnormalities found in this syndrome are discussed along with recent concepts of pathogenesis and treatment. The need for early diagnosis is stressed. The possible role of potassium depletion in the pathogenesis of the renal impairment found in this syndrome is discussed.

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The Milk-Alkali (Burnett) Syndrome*

Report of a Documented Case

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Milk and alkalies have been used for many years as adjuncts in the treatment of peptic ulcer. For the most part, their neutralizing effect on acid gastric secretion has been favorable and has justified their extensive use. The prolonged, excessive administration of alkalies, with or without milk, however, has occasionally caused certain metabolic complications of clinical importance:

1. *Alkalosis*. This has been the most common as well as the most easily recognized consequence of excessive alkali therapy, as attested by the many reports of its occurrence, even as early as 1922, when Grant⁽¹⁾ described the alkalosis resulting from Sippy powders (calcium carbonate and magnesium oxide). Excessive intake of these alkaline powders, or of sodium bicarbonate, Alka-Seltzer, etc., have long been recognized as causative agents in the development of clinical alkalosis. Jeghers and Lerner⁽²⁾ demonstrated that this could happen even without the loss of chlorides through vomiting. This form of alkalosis is treated simply by discontinuance of the absorbable alkali and substitution of one of the many non-absorbable types which are currently available.

2. *Renal insufficiency*. This consequence of excessive alkali therapy has also been recognized for many years. Hardt and Rivers⁽³⁾ in 1923, described the development of toxic symptoms, nitrogen retention, proteinuria and abnormal urine sediments in 16 patients while they were ingesting large amounts of absorbable alkalies. They found that all the symptoms and abnormal laboratory findings disappeared after the alkalies had been discontinued.

The question of antecedent renal disease having importance in the development of alkalosis during treatment with alkalies has frequently been raised. Wilkinson and Jordan⁽⁴⁾ believed it to be a factor in most of their cases. Others⁽⁵⁾ have stressed the importance of studying renal function in all patients undergoing a Sippy regimen of therapy. On the other hand, Kirsner and Palmer⁽⁶⁾ demonstrated that alkalosis could appear in the absence of renal disease. Moreover, they showed that patients with impaired renal function could be given large amounts of absorbable alkali without the development of alkalosis. In their study of clinical alkalosis they found that while no instance of persistent diminution of renal function occurred, a lowered urea clearance could

be found several months after the alkalosis had disappeared.

It is therefore believed that the kidney is not primarily involved in alkalosis, even though there is nitrogen retention and a decrease in renal function, and that this effect is reversible when the cause of the alkalosis is eliminated.

3. *Calcium retention*. Burnett and his associates⁽⁷⁾, in 1949, described 6 cases in which calcium retention occurred in association with renal insufficiency as a result of prolonged administration of both milk and absorbable alkalies. This retention of calcium had the following features: (a) hypercalcemia was present without hypercalciuria or hypophosphatemia, and (b) calcium deposition occurred in body tissues manifested especially by ocular lesions resembling band keratitis.

This syndrome has aptly become known as the "milk-alkali" syndrome since it occurs only in patients receiving large amounts of absorbable alkali along with calcium in the form of milk or Sippy powders for an extended period of time, such as frequently happens in the treatment of peptic ulcer. The importance of this syndrome, which, unrecognized, can lead to nephrocalcinosis and fatal uremia⁽⁸⁾, lies in its reversibility if detected early in its often protracted course.

It is the purpose of this paper to present the clinical and laboratory findings in one well-documented instance of this syndrome in order to emphasize certain of its features:

- 1) The difficulty in interpretation of early signs and symptoms which may be easily overlooked.
- 2) Its masquerade as chronic nephritis.
- 3) The occurrence of severe epigastric pain and of persistent pruritus as a part of its course.
- 4) To demonstrate that clinical signs and symptoms of the syndrome may persist for several years if unrecognized and untreated.

CASE REPORT

First hospital admission, May 25, 1953:

This 64 year old farmer was admitted because of the presence of blood in his stools of two weeks' duration. He had had constipation and hemorrhoids for many years with earlier, short episodes of rectal bleeding. There was also a history of episodic, and frequently prolonged, burning epigastric pain, occurring about an hour after meals and relieved by the ingestion of sodium bi-

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carbonate. This had been most bothersome for the past three years. His milk intake was habitually $1\frac{1}{2}$ - 2 quarts a day.

His past history revealed that at the age of 13 years, an inflammatory mass had developed in the anterior left neck, which had required incision and drainage after several weeks. There was much subsequent drainage and slow healing but no other sequelae. In 1928, his appendix was removed. A cystoscopy had been performed in 1943 because of a possible bladder stone; although uncertain, he was under the impression that a stone was not found. He had had arthritis of the lower back for many years and a right inguinal hernia, adequately managed by truss, for about 10 years. In 1946, he had had a mild myocardial infarction, proven by electrocardiogram, with recovery after 4 weeks rest at home. Since then, he had had typical angina pectoris on exertion with relief from sublingual nitroglycerine. A nocturia of 2-3 times had been present for the past 5 years. He did not smoke or take alcohol in any form. His recent medications had consisted of one multivitamin capsule (Unicap)[®] daily and sedation at bedtime. According to his wife, he had always been of somewhat nervous and moody make-up, and although this had been much more marked during the last 3 - 4 years with many somatic complaints of weakness, insomnia, etc., his more constant symptoms were those relating to the gastro-intestinal tract. He had frequently complained of the burning epigastric pain and had voiced his worry that this was due to a developing cancer. Intermittent itching of the skin, at times intense, had been present for at least two years.

Physical examination revealed a fairly well developed and nourished male, of obvious nervous constitution and voicing many complaints, but cooperative and in no apparent distress. The B.P. was 130/76, the pulse 80 and regular and the temperature 98.8°F. The skin was clear throughout. Bilateral arcus marginalis and grade I arteriosclerotic retinopathy were present. There was a healed, irregular, oblique scar in the left neck, extending from below the ear to one inch above the clavicle. The heart was slightly enlarged to the left and a soft, grade II, apical systolic murmur was audible. The peripheral arteries were moderately thickened and tortuous. The lungs were clear with normal findings throughout. No masses, spasm, tenderness, or evidence of visceral enlargement was found in the abdomen. A healed, right lower quadrant scar and small, reducible umbilical and right inguinal herniae were present. A rosette of old hemorrhoidal tags circumscribed the external anus and internal hemorrhoidal veins were palpable. The prostate was normal. A proctosigmoidoscopic examination the day following admission revealed only distended internal hemorrhoidal veins, some of which bled easily as a result of passage of the instrument.

The first vertical column in Table I lists the general laboratory findings obtained on this admission, with particular note of the nitrogen retention and the as-

sociated mild anemia. Two urinalyses showed a consistently low specific gravity with proteinuria and moderately heavy sediments consisting predominantly of calcium magnesium phosphate crystals. Two phenolsulfonphthalein tests, on succeeding days, revealed totals of only 7 and 9% of the dye to be eliminated in the 2 hour period following the intramuscular injection of the dye on each occasion. The serology was negative. Two stools were negative for occult blood by quiac test. The fasting blood sugar was 112mg. % and the Westergren erythrocyte sedimentation rate was 17.5 mm/hr. A normal precipitate in the urine was obtained with the Sulzowitz reagent. A roentgenogram of the chest showed normal lung fields, slight enlargement of the heart to the left and moderate tortuosity of the aorta. An electrocardiogram showed regular sinus rhythm, normal conduction times, and depressed ST segments with inverted T waves in leads 1, 2, AVR, V₁, V₅ and V₆, which was interpreted as the residual pattern of his earlier myocardial infarction. A barium enema study was interpreted as normal. The barium meal examination showed considerable pylorospasm with some retained gastric secretion but no obvious abnormality of esophagus, stomach or small bowel, and when repeated the following morning, after aspiration of all gastric contents, again showed only pylorospasm with a normal duodenal cap and passage of the barium after relaxation occurred. During these examinations, no calcification in the kidneys or urinary tract was noted.

This hospital stay was uneventful except for frequent complaints of epigastric pains (for which he was allowed to take sodium bicarbonate freely since it apparently gave some relief), nausea, anorexia and itching of the skin. Much of his nervous tension seemed to subside as soon as he learned that the various tests had showed no cancer. He was discharged with the diagnoses of⁽¹⁾ hemorrhoidal veins with bleeding and mild secondary anemia, and⁽²⁾ chronic nephritis, type undetermined, and was advised to continue a convalescent ulcer diet with free intake of milk and sodium bicarbonate, and to take iron tablets, Unicaps[®] and sedatives at night as needed.

Second hospital admission, March 29, 1954:

In the 10 months' interval, he had continued to have the same epigastric burning pains and "gas" of increasing frequency and severity. His relief from sodium bicarbonate and milk had become less marked and predictable, and large amounts (2 tablespoons) of the bicarbonate frequently had no favorable effect. The intensity of this pain, its tendency to last for hours and to result in substernal anginal pain had resulted in the administration of opiates on several occasions during the 3 weeks prior to this admission, as the only definite means of relief. He had stopped eating many foods in the belief that they were the cause of the distress, constipation had become marked, and generalized itching of the skin had become almost intolerable at times. He had become quite pale in spite of the fact that appre-

ciable rectal bleeding from the hemorrhoids had not occurred, his angina had become more frequent and severe, and he had lost about 10 pounds in weight.

Physical examination, except for the generalized pallor of skin and mucous membranes, revealed similar findings to those of the previous admission. The B. P. was 130/74, the pulse 84 and regular and the temperature 99.2°F.

The laboratory findings at this time are summarized in the second vertical column in Table I. While the nitrogen retention was of about the same degree as that noted in his previous study, the progressive anemia was manifest. Urinalysis again discloses the findings of a low, fixed specific gravity, proteinuria and an abundant, calcium-containing crystalline sediment. Two stools gave a negative guiac test for occult blood. The sedimentation rate was 19 mm/hr. The serum electrolytes and proteins were normal. An electrocardiogram was not significantly changed. A roentgenogram of the chest and barium enema study were again without positive findings. Barium meal examination disclosed the same prolonged pylorospasm with slight hypertrophy of the gastric rugal folds, but no evidence of peptic ulceration or other abnormal finding.

Treatment on this admission was quite similar to that previously instituted, and consisted of a convalescent ulcer diet, multivitamins, iron, sodium bicarbonate (lib), frequent milk feedings and night sedation. One transfusion of 500 ml. bank blood was given, resulting in a gain of 0.9 gm of hemoglobin. Again, as on the previous admission, he seemed to improve symptomatically shortly after being informed that these repeat examinations had shown no evidence of cancer. He was discharged after three weeks hospitalization, with the same diagnoses and with advice to continue the same regimen of diet and medications.

Third hospital admission, Feb. 8, 1956:

His chief complaints were again those of persistent epigastric pains and of generalized pruritus. Since his last discharge from the hospital he had continued to have prolonged bouts of burning epigastric pain with frequent nausea and occasional emesis of recently ingested food or fluids. There had been no hematemesis or melena. Anorexia and constipation were constant as was also the persistent generalized itching of the skin. He had lost another 8 pounds in weight, had become quite weak and during the past 3 months had spent most of his time in bed. His generalized pallor had not improved even though he had continued his iron tablets in steady dosage. His intake of sodium bicarbonate and milk was daily about 6 tablespoons and 1½ - 2 quarts, respectively.

Physical examination revealed a nervous, apprehensive, thin, pale, elderly male, complaining bitterly of generalized itching. Other than for the generalized pallor and for a sour, offensive breath, the physical findings were the same as those noted on his two previous admis-

sions. The B. P. was 150/90, the pulse 100 and regular, and the temperature 98.9°F.

The initial laboratory findings of this admission are listed in the third column in Table I. The hemoglobin of 7.1 gm. and erythrocyte count of 2.2 mil., indicated a progressive anemia in spite of his iron and vitamin intake. The erythrocytes were predominantly hypochromic but of variable size on blood smear examination. Bone marrow aspiration yielded smears showing relative hypoplasia and a normal myelo-erythroid ratio of cells. Nitrogen retention was again evident. Urinalyses gave similar findings to those previously noted and were alkaline, of low, fixed specific gravity, contained moderate amounts of protein with many calcium-containing crystals in the sediment. The serum calcium was 12.3 mg.%, the inorganic phosphorus 3.8 mg.%, and the alkaline phosphatase 1.4 Bodansky units. The total protein and serum electrophoretic pattern were normal. The CO₂ was 30 m.eq./l (66.9 vol.%) in comparison to the normal findings of the previous hospital admission. The urinary Sulkowicz precipitation appeared normal in amount (the 24 hour urinary calcium excretion was not quantitatively determined). A repeat gastrointestinal study by barium enema and meal again disclosed only persistent pylorospasm. Ophthalmologic examination revealed the presence of subepithelial deposits at the outer limbus of both eyes, consistent with deposits of calcium. There was no roentgenographic evidence of nephrocalcinosis.

During the first week of this hospitalization period, there was marked anorexia, nausea, frequent emesis and marked constipation. During this time, he was given intravenous fluids containing B-complex and C vitamins and intramuscular Thorazine. The use of sodium bicarbonate and Milk was discontinued. As nausea and emesis subsided, he began to improve and soon was able to take a low-calcium diet and Maalox® between meals. Within two weeks appetite returned and all epigastric pain and pruritus disappeared. Improvement from then on was constant, with gain in weight and return of strength. At the time of discharge from the hospital, four weeks after admission, he stated that "he felt better than he had in years."

Serial changes in the abnormal laboratory findings are shown in succeeding columns in Table I. Within the month, the hemoglobin had increased 4.5 grams to a total of 11.6 grams (74%), and the erythrocytes from 2.2 to 3.8 million. The blood urea nitrogen had dropped to 38 mg.% and the urine had become acid, while the low specific gravity, proteinuria and calcium crystalluria persisted. The serum calcium decreased from 13.3 to 12.0 mg.% while the inorganic phosphorus remained normal. The serum CO₂ decreased to 26 m.eq./L.

His continued improvement after discharge from the hospital is evidenced by the laboratory findings 6 months later, as shown in the last column of Table I. At this time, the serum calcium and phosphorus were well within the normal range, and the hemoglobin and erythro-

cyte values nearly normal. Some nitrogen retention was still evident by the improved blood urea nitrogen value of 22 mg.%. Examination of the urine also showed a persistent low specific gravity and slight proteinuria.

On September 7, 1956, when last seen, he was still following the same regimen, had gained 12 pounds in weight, and was able to do considerable work about his farm. He had spent most of that morning plowing a field for spring planting and, in fact, had been doing manual work that he had been unable to do for nearly 5 years. There had been no return of epigastric distress or of pruritus and his angina was much less frequent and severe than formerly.

DISCUSSION

This case corresponds to those previously described by Burnett and associates⁽⁷⁾ and serves as good illustration of the development of the following important aspects of the milk-alkali syndrome:

- 1. The history of prolonged and excessive intake of absorbable alkali and of calcium in the form of milk.
- 2. The progressive symptoms of abdominal pain, anorexia, nausea, vomiting, pruritus and weakness.
- 3. The paucity of clinical findings until late in the

course, when anemia, weight loss, invalidism and band keratitis became evident.

- 4. The laboratory findings, as the disease progressed, indicative of:
 - a) Renal insufficiency
 - b) Anemia
 - c) Mild alkalosis
 - d) Hypercalcemia without hypophosphatemia
 - e) Normal urinary calcium excretion

These features serve to distinguish this syndrome from other similar clinical entities. The final proof of the presence of the milk-alkali syndrome is inherent in the demonstration of a return to normal of the various abnormal laboratory findings, after oral administration of milk and alkali (absorbable) have been discontinued. Usually the elevated calcium level in the blood returns to normal within two or three weeks, through response may be variable.

As exemplified by this case, an instance in which the early signs, symptoms and findings were wrongly interpreted, an erroneous diagnosis of chronic nephritis was made, and an attempt to determine deposition of calcium in the tissues (particularly in the eyes in the form of band keratitis) was not made, it is felt that an additional case report of this syndrome, emphasizing its oc-

TABLE I. LABORATORY INFORMATION

Date	5-25-53	3-29-54	2-9-56	2-27-56	3-5-56	3-12-56	9-7-56
Hemoglobin Gm.	12.1-78%	8.8-57%	7.1-46%	10.6-68%		11.6-74%	12.8-82%
Red cells	3.9 mil.	2.7 mil.	2.2 mil.	3.3 mil.		3.8 mil.	4.0 mil.
White cells	6600	7000	11700	7400		10,600	7200
Urine pH	Alk.	Alk.	Alk.	Alk.	Alk.	Acid	Acid
Sp. Gr.	1.009	1.007	1.004	1.005	1.006	1.009	1.010
Protein	50 mg%	10 mg%	40 mg%	30 mg%	50 mg%	10 mg%	10 mg%
Wbc	0-1	0-1	2-6	0-2	0-1	0-1	0-1
Sulk.	1+		1+	1+	1+	1+	1+
Blood B.U.N.	53	50	44	37	46	38	22
Calcium			12.3	13.3	12.1	12.0	10.4
Phosphorous			3.8	2.8	2.8	3.1	3.0
Alk. phos.			1.4 unit				
CO ₂		22 meq	30 meq			26 meq	
Cl		100 meq	102 meq				
Na			133 meq				
K		5.2 meq	5.1 meq				

SERIAL CHANGES IN THE LABORATORY FINDINGS IN A CASE OF TYPICAL BURNETT SYNDROME EXTENDING OVER A COURSE OF MORE THAN 4 YEARS.

currence and features, may aid in the creation of an awareness of its characteristics. This is particularly true in view of the high incidence of peptic ulcer and its treatment by many physicians with absorbable alkali. Certain symptoms, as they acquired prominence in this patient, perhaps deserve further comment:

1. The recurrence of prolonged bouts of severe, burning epigastric pain. This was a frequent and bitter complaint. While at first usually relieved by sodium bicarbonate, there soon was no relief from this or other ant-acids. Occasionally, it was of sufficient severity to require an opiate by hypodermic injection for relief. In spite of the fact that a peptic ulcer, or some other gastric lesion, was constantly suspected and repeated barium studies accomplished, no organic basis for this pain could be found. This symptom subsided within a week after milk and sodium bicarbonate administration was stopped, and has not recurred since. One other patient observed by the author presented with this same symptom, of sufficient severity to require frequent opiate injections by her physician for relief, to the extent that she was finally admitted to the hospital for the express purpose of avoiding opiate addiction; again no organic basis for this pain could be found, and with recognition of the presence of the milk-alkali syndrome and discontinuance of the milk and sodium bicarbonate which she had been taking in considerable amounts for some two years, there was quick relief of the epigastric pains within a week. Two of the six patients reported by Burnett and co-workers⁽⁷⁾ and 3 of the 8 reported by Scholz and Keating⁽⁸⁾, had epigastric pains without demonstrable ulcer. This suggests that the presence of intractable epigastric pain, occurring in a patient taking milk and absorbable alkali, should arouse suspicion of the milk-alkali syndrome.

2. The frequent complaint of constant generalized pruritus. This, too, was often a bitter complaint which had been present for nearly three years without obvious dermal, allergic or hepatic cause, and one which subsided soon after the syndrome was recognized and properly treated. The fact that it disappeared quickly and completely, before there was any demonstrable evidence of change in the findings of renal insufficiency, suggests another case. This patient's nervous, tense, apprehensive and worrisome make-up suggested a psychogenic cause. Why it should be present to such an annoying degree in the presence of hypercalcemia, which usually has a soothing effect on sensory nerves, is also unanswered. Burnett and his group⁽⁷⁾ noted pruritus in 4 of their 6 patients, attesting to its incidence in this syndrome.

3. The severe degree of anemia which developed as the syndrome progressed in its long course in this patient, its refractoriness to iron and vitamin treatment for at least a year, and its quick response to the simple withdrawal of milk and sodium bicarbonate. The exact relationship of this anemia to the renal insufficiency is uncertain but suggested by the laboratory findings.

Only 1 of the 6 patients reported by Burnett developed an anemia of this degree.

In the *differential diagnosis* of the milk-alkali syndrome, the following conditions have to be considered:

1. Peptic ulcer. This may be present or absent. In view of the fact that the milk-alkali syndrome develops almost exclusively in patients with treated peptic ulcer, and, as demonstrated by the foregoing case history, that continued epigastric pain may be a feature of the syndrome rather than of ulcer, it is apparent that it would be the tendency for most physicians to advise continuation of a strict ulcer regimen with liberal use of milk and anti-acids. An important role in the control of any such regimen should be intermittent laboratory checks for the presence of alkalosis, renal insufficiency and calcium retention. All physicians should be alerted to the dangers of absorbable alkali and should prescribe ant-acids which are not absorbed.

2. Chronic nephritis. The preceding case history demonstrates the ease with which this error in diagnosis was made by two different physicians on each of the two initial hospital admissions. All physicians should be aware of the possible occurrence of renal insufficiency as a complication of the prolonged administration of absorbable alkali. Sippy powders, sodium bicarbonate and other absorbable alkalies are still widely used, even though many very effective ant-acid preparations which do not contain absorbable alkali, are available. This syndrome fits into the growing list of medically-induced diseases, as one which can be a lethal entity and yet one which is easily avoided. Proprietary ant-acid preparations, with similar potentialities, are easily available to the uninformed public. Snapper and associates⁽⁹⁾ have reported the case histories of 2 patients (one of whom died) with the milk-alkali syndrome in whom there was an excessive intake of absorbable alkali as a probable inciting cause.

Chronic nephritis is ordinarily associated with hypocalcemia, hyperphosphatemia and a metabolic acidosis, — all findings at variance with those of the milk-alkali syndrome. Moreover, the relatively rapid improvement in renal function which results when the use of milk and absorbable alkali is discontinued, is one of the striking features of the syndrome.

3. Hyperparathyroidism. When a patient presents with the fully developed milk-alkali syndrome of renal insufficiency and metastatic calcinosis, primary hyperparathyroidism is first to be suspected and excluded. Helpful distinguishing features of the milk-alkali syndrome are: a) the finding of a normal serum inorganic phosphorus, b) the absence of an increased urinary calcium excretion, c) the absence of skeletal demineralization, d) the presence of mild alkalosis (helpful if present,) e) the absence of an elevated serum alkaline phosphatase, and f) the lowering of the serum calcium by a low calcium dietary intake.

Atlas and co-workers⁽¹⁰⁾, believing that hyperpara-

thyroidism may be missed in its differentiation from this syndrome, have stressed the difficulties involved in arriving at a correct diagnosis. According to them, reliance should not be placed on simple urinary Sulkowicz tests for the demonstration of increased calcium excretion, because the only reliable test consists of the quantitative determination of the calcium excreted in 24 hours while the patient is on a low-calcium diet. This is an important reminder, for with the polyuria associated with hyperparathyroidism, the diluted urine frequently gives a normal Sulkowicz precipitation.

The difficulties encountered in the differentiation of these two clinical entities are clearly described in the discussion of a case by Dr. Alexander Leaf in one of the clinicopathological exercises of the Massachusetts General Hospital⁽¹¹⁾.

4. Excessive intake of vitamin D. This is excluded easily by the history obtainable from the patient.

5. Acute osteoporosis, metastatic malignancy with bone involvement, sarcoidosis and myelomatosis are other clinical entities to be considered when hypercalcemia and renal failure are associated findings.

SUMMARY AND CONCLUSIONS

1. The characteristics of the milk-alkali (Burnett) syndrome are briefly reviewed and summarized.

2. A case report, illustrating the clinical features and laboratory findings of this syndrome as they presented in a patient requiring three hospitalizations during a course of five years, is included in some detail.

3. Attention is directed to the fact that this is a potentially lethal syndrome, of dietary and medicinal

origin, and one which is not only preventable, but reversible if recognized early in its course.

4. The potential dangers of prolonged administration of absorbable alkali are stressed.

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Bronchography, A Simplified Technique

JOHN W. CARRIER, M.D.*

For many years the bronchograms performed at this hospital have been the result of the combined efforts of the otolaryngologist, anesthesiologist and radiologist. Although the results in most instances were satisfactory, the technique left much to be desired from several aspects. During the past two years, nearly all bronchograms have been performed entirely by the radiologists in their department with, we believe, marked improvement both in patient comfort and in diagnostic quality of the examination.

Previously, patients for bronchography were admitted to the hospital prior to the examination, often a day or so ahead of time. Both evening and morning premedication were administered and the patient was taken to the operating room. Here the patient was anesthetized and a bronchoscopy was performed, following which he was transferred to the Radiology Department for instillation of the opaque medium, fluoroscopic examination and films. The only contact between radiologist and patient was during the fluoroscopy and at that time conversation was impossible. Occasionally the bronchoscopy and bronchography were both carried out in the Radiology Department and though this improved the situation, several disadvantages were still encountered.

In deciding to change to our present method of handling these cases, three major considerations were evaluated, namely: 1. Personnel factors, 2. Patient comfort and expense, and 3. Final results.

There is some overlap between the first two factors mentioned above, since the patient expense must vary directly with the personnel involved. When a patient is admitted to the hospital, many professional and non-professional people come into direct contact with him, who would not be involved at all if the same patient were examined on an outpatient basis. Also, operating room personnel and other attendants are necessary in preparing and transporting the in-patient. Needless to say, the operating room and the hospital as a whole are working full time caring for the surgical and acutely ill patients, and any avoidance of unnecessary admissions helps to relieve some of the extra pressure. Formerly, when a patient for bronchography was being prepared in the operating room the Radiology Department was notified. From that time until completion of the examination, at least three of the department personnel, including the radiologist, and one of the radiographic

rooms had to be prepared to receive him and perform the examination. This is especially inconvenient when a bronchoscopy is performed first, since it is impossible to predict the time necessary to perform an individual bronchoscopy and it often amounts to 30 minutes or more, which could be well spent caring for other patients.

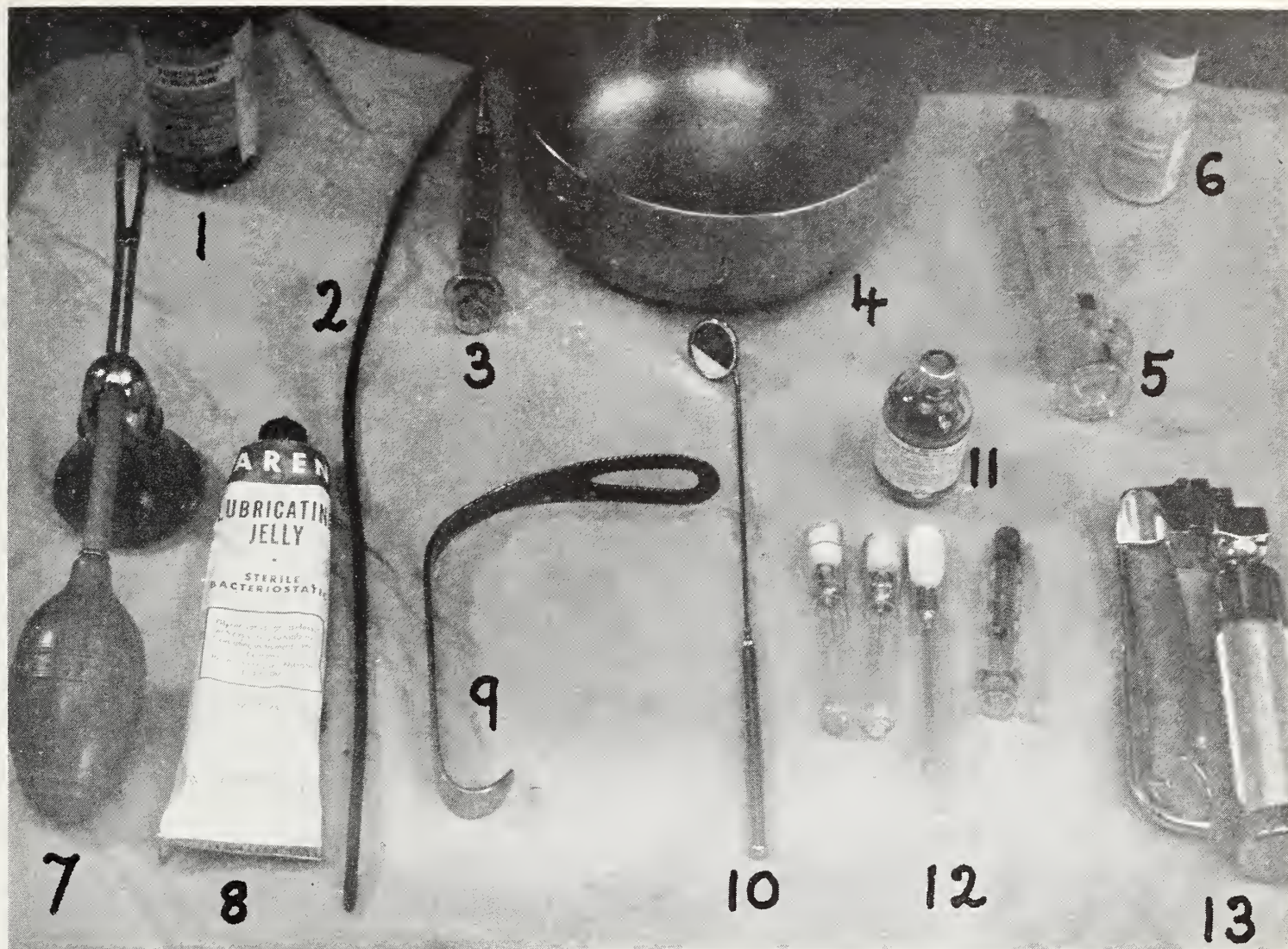
Under our present method, the patient is not admitted to the hospital, unless for some other reason, because we do not feel that an evening premedication is necessary. Also, if a bronchoscopy is to be performed, it is done at a time separate from the bronchography. There are very few people who will remember a bronchoscopy or bronchographic examination with pleasure, and when the two procedures are combined it is an even more distasteful experience. We believe that if a procedure is to be carried out, it should be completed as soon as possible, and that two shorter examinations are more desirable than one longer and more exhausting procedure. If the anesthetic risk were high, combining procedures would be justified; however, we feel that this risk is minimized by our present technique. Also, frequently the anesthesia given prior to the bronchoscopy is not very effective by the time the patient arrives in the Radiology Department and coughing is very difficult to control so that final results are often less than satisfactory.

Perhaps the most important single factor determining the final result of a bronchogram is the effectiveness and duration of the anesthesia. A patient with little or no remaining bronchial anesthesia can hardly be expected to control cough when the opaque medium is introduced directly into the respiratory tract. Therefore, if an adequate examination is to be performed the time interval between administration of anesthesia and instillation of the contrast medium must be reduced to a minimum. A second factor involved is the ability of the patient to cooperate while the opaque medium is being introduced. This in itself depends to a great extent on the emotional state of the patient. Frequently a patient is quite tired and emotionally upset by the time a bronchoscopy has been completed and though he desires to help, he is too physically exhausted to cooperate. This is also important when films are being made in the various essential positions.

A list of the materials used in this examination, with a key to the accompanying illustration, follows:

1. Pontocaine Hydrochloride 2%®
2. Rubber catheter, No. 12 Fr.
3. 5 cc. syringe with adapter

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4. Sterile basin
5. 20 cc. syringe
6. Contrast medium
7. Atomizer with adjustable tip
8. Lubricating jelly
9. Metal tongue blade
10. Laryngeal mirror
11. Seconal Sodium,[®] parenteral, 50 mg./cc.
12. 2 cc. syringe and assorted needles
13. Indirect laryngoscope
14. Sterile water)
15. 4 x 4 gauze squares) Not illustrated
16. Emesis basin)
17. Head lamp)

When a patient is scheduled for bronchography, he is told to omit breakfast that day and to present himself at this department about one and one half hours early, at which time he is given 100 mg. of Seconal Sodium[®] by mouth. He then is taken to the recovery room in the department and asked to rest as much as possible. At this time the radiologist talks with the patient, obtaining any clinical information desired and describing to the patient the procedure to be performed. The patient is ordinarily told exactly what will be done, and what he can do to make things easier for both himself

and the radiologist. He is then left to rest until the procedure is begun.

After a suitable time interval, the patient is taken into the radiographic room to be used for the procedure and is asked to sit on the table facing the center of the room. The Seconal[®] which the patient has taken is not enough to cause sleep or even drowsiness, but it does relieve nervous tension to a considerable extent. Anesthesia is then begun, first by spraying the mouth and pharynx with 2% Pontocaine[®]. The patient is instructed not to swallow, but to spit all of the solution into the emesis basin that he has been given. As the anesthesia becomes effective the patient is given gauze squares and is asked to hold out his tongue with the square, thus opening the hypopharynx which is then sprayed with the Pontocaine[®]. The spraying procedure is carried out about 3 times per minute for about 3 minutes. Rest intervals are allowed as necessary. Following this the patient is asked to breathe in and out deeply, through the mouth, and the atomizer tip directed downward is put into the pharynx. With each inspiration, the Pontocaine[®] is sprayed, thus anesthetizing the larynx and trachea, and though some coughing is experienced at first, it soon stops. A small amount of

Pontocaine® may be sprayed into the nasopharynx, but this is seldom necessary.

With the laryngeal mirror the larynx and vocal cords are visualized. The No. 12 Fr. rubber catheter is then introduced through the nose, until the tip is seen in the oropharynx. The patient is then told to breathe deeply in and out, and during inspiration the catheter is rapidly advanced into the trachea. This maneuver is relatively simple and is usually completed in one or two attempts. Coughing is rare if anesthesia has been properly administered and sufficient time allowed for it to become effective. Indirect laryngoscopy may be used at this time to verify the presence of the tube in the trachea. Following this the 5 cc. syringe is filled with 0.5% Pontocaine®, made up in the sterile basin, and the entire amount is injected through the catheter. Coughing usually occurs immediately and care must be taken that the catheter is not coughed out. This coughing is usually of short duration, and the patient is then asked to lie down. Instillation of the contrast medium is carried out after the position of the catheter has been checked under fluoroscopy.

Upon completion of the study the patient stays in the department until he has fully recovered, a period of time varying from 30 minutes to 2 hours. Usually the patient feels well enough to leave immediately, but we ask him to stay for a short time to rest. We have not used parenteral Seconal Sodium® during any examination to date, but keep it on the tray for administration in the event of an untoward reaction to the Pontocaine®. Formerly we used intravenous Pentothal® as a standby, but because it must be mixed fresh or refrigerated if stored, the change to Seconal Sodium® was made.

At this hospital, we are now using "Dionosil Oily®" for our bronchograms, having found it somewhat less viscid than other media. In addition, this medium is mildly anesthetic in itself, and is seldom forced into the alveoli by coughing. Perhaps its main advantage lies in the fact that it is readily expelled from the respiratory tract by coughing and by absorption, and follow-up films taken as soon as 24 hours after bronchography have shown no residual opaque medium. The hazard of oil granuloma is thus removed and future examinations are

all of diagnostic quality. One slight disadvantage with this medium is that it is not quite as dense as others, but this can be compensated for by changes in the exposure factors.

The improvement in the results of our bronchographic examinations since the above method was instituted have been very gratifying. Our studies have been uniformly good, and certainly the patient has benefited in increased personal comfort and convenience as well as from the improved quality of the examination.

The total time required to perform this examination from beginning of anesthesia to completion of final films is approximately 30 minutes. Some exceptionally cooperative patients may be handled in less time and an occasional difficult patient may take slightly longer. The procedure itself is relatively simple, and the hazards are minimal.

We are now working with a new indirect laryngoscope which has a catheter guide. We feel this may make the procedure even more simple to perform, but as yet have not had enough experience to evaluate it properly. At present, however, I do not feel that this instrument will add significantly to our results except in young patients who are in relatively good health, since the instrument is somewhat bulky and more difficult for the patient to tolerate.

SUMMARY

A method of bronchography has been presented which we have found to be an improvement over that previously used in this hospital. Our reasons for carrying out the entire procedure in the Radiology Department itself are: 1. Increased patient comfort, 2. Decreased patient expense, 3. Decreased time loss in the department, and 4. Improved film quality.

CONCLUSION

We feel that the increased patient contact resulting from this method of examination has great advantages for both the radiologist and the patient. The patient's condition can be more thoroughly evaluated by the radiologist, whose own proper function on the medical team becomes better understood and appreciated by professional colleagues and laymen.

Anaphylactoid Reaction To Oral Tetracycline

RUDOLPH HAAS, M.D.*

Tetracycline compounds have generally been considered relatively safe drugs and comprehensive evaluations like that by Finland in February, 1954⁽¹⁾ have cited the lack of serious side effects. Minor toxic reactions, particularly those of the gastro-intestinal tract, of course, were commonly noted⁽²⁾.

Serious anaphylactic reactions, however, similar to those described after administration of penicillin have apparently been extremely rare. Careful search of the literature revealed only one report of such nature after the use of tetracycline⁽³⁾ and one after the administration of the older compound, chlortetracycline⁽⁴⁾. In this first mentioned report, Sakamoto describes an anaphylactic shock after the intramuscular injection of 100 mg. of tetracycline. The patient became unconscious in less than 20 seconds, his blood pressure dropped and convulsions occurred. The patient recovered within three hours after injection of epinephrine and mephen-termine. The other report describes a similar, more delayed reaction. In this instance, the patient developed nausea and diarrhea after taking 250 mg. capsules of chlortetracycline for three days; the drug was, therefore, discontinued. Two days later, another capsule was taken and the patient developed swelling of the eyelids and lips within several hours. The following morning the patient suddenly collapsed. She recovered after injections of epinephrine but still showed signs of urticarial swelling. The following day generalized urticaria appeared. This subsided eventually on Pyribenzamine® medication.

Recently, a rather severe anaphylactoid reaction to a single oral dose of tetracycline was encountered. Therefore, it is considered of importance to call attention to the occurrence of anaphylactic reactions after the use of tetracycline.

Case report: A male, age 48, weight 245 lbs, was seen on April 6, 1956, because of an infected sebaceous cyst in the post-auricular region, accompanied by marked cellulitis of 36 hours' duration. The past history revealed that the patient had seasonal hayfever for 35 years at times with slight asthma. In September 1951, he was given Aureomycin® ophthalmic ointment for an eye infection. In March 1955 he received Erythromycin® for upper respiratory infection. Two weeks prior to his last illness he had a cold while visiting in Chicago and was given an injection of penicillin. One week later he developed urticaria, which subsided after several days without specific treatment. No other anti-

biotics were taken by this patient at any other time as far as could be ascertained.

The infected cyst was incised and drained and because of the surrounding cellulitis the patient was given 500 mg. of tetracycline; 20 minutes later, while driving home the patient noticed that he was breaking out with hives and his lips began to swell up. By the time he reached his home, 5 to 8 minutes later, he had marked difficulty in breathing and severe wheezing developed. When he was seen 10 to 15 minutes later his eyelids and face were edematous. His body was covered with giant urticaria. His respiration was labored, there were rhonchi and wheezes heard over both lung fields. His blood pressure, usually about 140/90, dropped to 90/70 and his pulse was 126 per minute. He was given adrenalin subcutaneously and Benadryl® intravenously. This was followed later on by an intravenous injection of aminophyllin to relieve the severe wheezing. Inasmuch as his condition did not improve appreciably, he was admitted to the C. M. G. Hospital three hours later. His blood count showed 8,400 white cells; eosinophile count 0. Polymorphonuclear cells 61%, stabforms 25%, lymphocytes 10%, monocytes 2%. An injection of 50 mg. of cortisone was given intramuscularly followed by 25mg. every four hours. Within twelve hours, the patient's condition improved remarkably. The edema of the eyelids subsided, the urticarial lesions decreased considerably in number and the wheezing subsided completely. The patient was discharged after 15 hours hospital stay and continued to take cortisone orally for two more days. By then most of his symptoms had subsided.

SUMMARY

The occurrence of anaphylactic reactions after administration of tetracycline is quoted from reports in the literature and another instance occurring after a single oral dose of tetracycline is described. Although this type of reaction is admittedly rare, attention is called to the possibility of such serious side effects even upon oral administration of this drug.

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*Central Maine General Hospital.

Surgery In Elderly Patients

JOELLE C. HIEBERT, JR., M.D.*

INTRODUCTION

The average age of persons living in this country is getting higher year by year. The average age of death of the Metropolitan Life Insurance Company's policyholders was 55.8 years in 1929; 62.5 years in 1939 and 67.8 years in 1949.⁽¹⁾

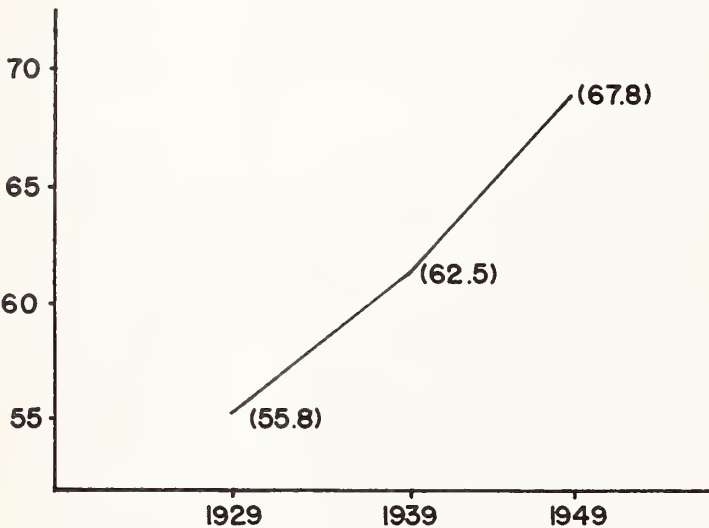


FIG. 1. Age of death of population, showing greater longevity in recent years.

With an aging population, more and more elderly patients will require surgery. The problem of treating these people is one which needs to be honestly faced. The surgeon not only must solve problems of good pre- and postoperative management but social and economic issues need to be considered as well.

It is well known that elderly patients react poorly to shock, are apt to show evidence of fluid and electrolyte imbalance, are prone to develop thrombo-embolic complications, and may otherwise react unfavorably to surgical procedures. It is important, therefore, to evaluate these people carefully, to perform precise and reasonably rapid surgery under good anesthesia and to watch them carefully in the postoperative period for signs of physiological dysfunction, and to institute appropriate therapy as needed. Early ambulation, adequate fluid replacement, good nursing care and an enthusiastic attitude on the part of all ward personnel allow for a high recovery rate.

It has been shown by Parsons et al⁽²⁾ that emergency surgery in elderly patients carries a high mortality rate. Therefore, any elective procedure should be done to

forestall future difficulties for which an emergency operation is necessary. This is particularly true of hernias and the so-called "silent gallstones." Many people have worn trusses for years because they were told, "never have an operation," only to incarcerate or strangulate later on.

The "silent gallstone" frequently does not remain silent. In addition, the relationship of gallstones to carcinoma of the gallbladder is well known and proper surgery in these patients may prevent the development of malignancy. This may be the only preventable intra-abdominal malignant disease.

Since July 1, 1955, there were a total of 95 operations performed on patients over the age of 70 on the ward surgical service of the Central Maine General Hospital.

The age spread and general type of surgery performed is shown in Figure 2.

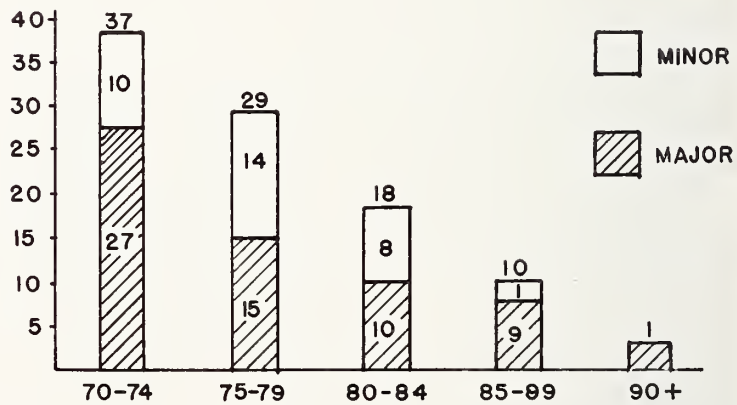


FIG. 2. Number of cases operated on at various ages showing distribution of major and minor cases.

The distinction between major and minor operations is an arbitrary one. In general, operations taking longer than one hour under general or spinal anesthesia are classed as major.

The age of 70 is chosen as most recent reviews of geriatric surgery use this age.

If a patient was operated on more than once for the same general disease process, each operation is counted, as a separate operative risk is faced each time.

The total major and minor procedures done are shown in Fig. 3 as well as the number of deaths in each group.

There were a total of seven deaths in this group of 95 patients. One death was not related to a minor surgical procedure. This followed a cervical lymph node biopsy by 24 days. An autopsy revealed carcinomatosis.

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	NO.	%	DEATHS
MAJOR OPERATIONS	62	66%	5
MINOR OPERATIONS	33	34%	1

FIG. 3. Summary of deaths following major and minor surgery.

The six deaths which appeared related to surgery are shown in Fig. 4.

Pt.	Age	Clinical	Diagnosis	Cause of Death	Anesthesia
C.M.	88	A.S.	gangrene of foot	Bronchopneumonia 7th d.	Spinal
A.C.	82	A.S.	gangrene of foot	Bronchopneumonia 3rd d.	Spinal
J.R.	82	Intra-abdominal abscess (cause undetermined)	Sepsis 7 hrs.	Na Pent, N ₂ O ₂ O ₂ , Ether	
C.C.	83	Incarcerated hernia	Cardiac failure, Bronchopneumonia 4th d.	Na Pent, O ₂ , Ether, Ane-	tine
W.S.	72	Intestinal Obs.	Wound infection Bronchopneumonia 12th d.	C ₃ H ₈ , Na Pent	
B.S.	81	Scalp wens	Bronchopneumonia 5th d.	Procaine 1%	

FIG. 4. Diagnosis, age, cause of death and type of anesthesia employed.

All of these deaths occurred within two weeks of surgery and all were the result of complications of the surgery. All types of anesthesia were used and no unusual complications were noted.

Figure 5 shows an analysis of the disease types seen.

PRE-OPERATIVE EVALUATION OF PATIENTS

As age increases, certain metabolic changes occur, many of which are not clearly understood. The functional reserve of various organs decreases. This might be

DISEASE TYPE	NO.	%	DEATHS	%
NEOPLASMS	49	51	0	-
INFECTIONS	15	15	3	20
HERNIAS	8	8	1	12
BILIARY TRACT	5	5	0	-
MISC.	16	16	2	12

FIG. 5. Mortality rate of various disease types.

SERIES	YEAR	AGE	NO.	DEATHS
BOSCH ET AL ³	1952	OVER 70	500	16.1 %
HAUG + DALE ⁴	1952	OVER 70	136	13.9 %
COLE ⁵	1953	OVER 60	3,656	5.6 %
LIMBOSCH ⁶	1956	OVER 70	1,136	25.5 %
C.M.G.H.	1956	OVER 70	95	6.3 %

FIG. 6. Summary of recent literature showing mortality rates.

exemplified by the relative inability of elderly patients to withstand infection, burns, intestinal obstruction, pneumonia and tracheal aspiration of gastric contents.

An elderly patient may be found to have a normal blood pressure and pulse, and his blood volume may be normal, but the loss of a few hundred cubic centimeters of blood may cause a profound fall in blood pressure because of inelastic vessels due to arteriosclerotic changes. Thus, normal clinical and laboratory findings pre-operatively may not be truly indicative of resistance to the various stresses caused by an operation. In addition to a carefully taken history and thorough physical examination, the usual laboratory tests should include a blood-urea-nitrogen or non-protein nitrogen. Additional laboratory tests should be done as indicated, and a chest x-ray should not be overlooked. There is a growing feeling that an EKG is all that is needed to evaluate the heart pre-operatively. All that an EKG will do for the surgeon is to show evidence of a recent myocardial infarction. Certainly more reliance should be placed on the patient's functional capacity to climb stairs, perform work and so forth.

Bronchopneumonia and wound sepsis are the most common complications and both may be prevented.

Bronchopneumonia may be prevented by frequent turning of the patient in the first 24 hours and by early ambulation. Following prolonged surgery, the use of Penicillin for a few days may help prevent pneumonia, but it is no substitute for good nursing care and early ambulation.

Infected wounds have plagued surgeons for centuries. We now know that good aseptic technique and gentleness at the time of surgery are more important than the use of antibiotics.

CONCLUSIONS

- 1. With an aging population more and more patients are presenting themselves for surgical treatment.
- 2. Age per se is not a contraindication to major or minor surgery.
- 3. The choice of an anesthetic agent appears to be less important than the choice of the anesthetist.

Continued on page 96

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Guest Editorial

The Journal of the Maine Medical Association—Your Journal

It has been nearly 10 years (August, 1947) since the Council of the Maine Medical Association appointed an Editorial Board consisting of one member from each Councilor District plus an auxiliary committee consisting of one member from each County Society. Eugene E. O'Donnell, M.D., Portland, who originated the idea of having hospital issues, was appointed chairman of this Board. It was his suggestion that hospitals assume the responsibility for all the scientific material appearing in their assigned issue. The first hospital issue was in August, 1948 and was the Maine General Hospital Number.

It is the opinion of the writer that these hospital issues have aided materially in procuring scientific articles for alternating issues of the Journal. The Editor, under this plan, has been assured of having adequate scientific material on alternating months, however, there is a paucity of scientific material for the remaining issues. The Journal of the Maine Medical Association is an essential organ of the Association, disseminating information aside from scientific material, such as an-

nouncements, county society notes and reporting the activities of the state society. This is your Journal — of which you should be proud. The April issue of the Journal of the Maine Medical Association will be known as "The University of Vermont College of Medicine Issue." And, it is hoped that Dartmouth Medical School will submit material for a later issue.

If Vermont, New Hampshire and Maine were to combine — and this has reached only the discussion stage — in a tri-state medical journal, there are many problems that would require careful planning including the appointment of an editorial board and the jurisdiction of the editorial board. On the other hand, the problems of medical practice are the same and perhaps a closer alliance of these three state societies would be of mutual benefit.

While we feel that the Journal has improved in the past ten years we must not be complacent. Your Journal needs more scientific articles, CPCs, reports of County Society activities and reports of specialty groups.

W. A. C.

Across The Desk

Now Is The Time

The polio season comes late in Maine! How oft I've heard that story told. The fact of the matter is that at this writing (February 1957) one case has already been reported from Aroostook County.

If 70% or more of the population of the State of Maine is successfully immunized during the next nine months, the incidence of paralytic polio among residents of the State of Maine should drop to the zero level.

The Federal and State programs for protection against polio are structured to include only those people below age 20 (the high incidence group). The Federal program is due to lapse in June, and the Maine Medical Association through its Council is urging the public to "go to your doctor and be immunized against polio." That the vaccine is safe has been successfully demonstrated in over 70,000,000 inoculations. That it is effective is no longer in doubt.

Dr. Philip Good, speaking for the Maine Academy of Pediatricians, says, "We are stressing the importance of adult immunization to our patients' parents. We have pointed out the fact that nonimmunized parents

may still contract paralytic polio from their immunized children who may have only the nonparalytic form."

The Salk vaccine's effectiveness depends upon the mass of vaccine, the potency of the vaccine and the time interval of administration. It is recommended that three doses of 1 cc. each be given intramuscularly at the following intervals: The second inoculation should follow approximately four to six weeks after the first, and the third inoculation should be given about seven months later. When at a later date the immunized patient is exposed to sufficient amounts of a virulent organism, the antibody titer is suddenly and dramatically raised, and the immunized subject is able to battle the virus of polio. The nonimmunized contacts of this individual may not be as fortunate.

The Council of the Maine Medical Association is encouraging all M.D.'s to get behind the lagging polio immunization program and to push it. Doctors from all over the State have been asked to set up programs in their own areas compatible with the customs of each area, and to encourage everyone to be vaccinated.

How — Where — How Much

The administration of this program is left entirely in the hands of each individual M.D. Some county societies are sponsoring a uniform program throughout their county. In other areas it is being done on a town by town or city by city basis. In still others each individual doctor is setting up his own program. Some M.D.'s are sending out cards to all patients asking them to call for an appointment. Others are setting aside a two-hour period each week for polio vaccinations.

For safety, permanency of records, and ease of administration, the doctor's office is the place to give the vaccine. In some areas doctors are making arrangements to administer the vaccine to groups during a time when the doctor's office would normally be closed. For example, 12:00 noon to 2:00 p.m. on Wednesday afternoon or Saturday morning. In practically all areas the first and second inoculations will be given during March, April and May, but each county, each city, each group, each individual is urged to do it in the way that best fits his office schedule.

The cost of immunizing with polio vaccine has been

overplayed and so represents a deterrent in the minds of some people. It is of interest that the polio insurance policies of the past few years (which sold like hot cakes) cost approximately \$10 per person and provided only a small amount of financial protection against polio for one year. The cost to the patient for polio immunizations is small, and the protection afforded is great. This is a protection that has no time clause, and the expiration date is not yet recognizable. Freidrich Wilhelm Nietzsche said it best in his *Genealogy of Morals*, "Every tiny step forward in the world was formerly made at the cost of physical and mental torture."

The major problem is not the dose or route of administration — nor is it the cost — but rather how to get people to take the vaccine. Indifference on the part of the public can be overcome by a forceful attitude on the part of the doctors. By comparison to each standard this giant step costs very little.

In the final analysis the vast majority will follow the leadership of his doctor. Have you had your Salk vaccine, Doctor?

Change in Medicare Regulations

The Defense Department announces a change in regulations that will eliminate some paperwork for

physicians under the dependent medical care program. When the patient was treated on an outpatient basis

for injuries under the old system, the doctor would collect the first \$15 from the patient, apply it to his bill, then submit the remainder of his bill jointly with the hospital or lab bill for payment by the government.

Doctors to Play Part in National Sickness Survey

The nationwide sickness survey scheduled to get under way in May will be reinforced through contacts with a limited number of family physicians, according to Dr. Forrest Linder, survey director. While the project is administered by Public Health Service, the scientifically controlled door-to-door sampling will be done by the Commerce Department's census experts.

The adult answering the door will provide the information, Dr. Linder says, but because of the inability

In the future if the doctor's fee exceeds the \$15, he will submit the remainder of his bill separately, and the hospital or lab will submit its bill separately.

of untrained people to give an accurate medical report, some of the answers will be checked against the family doctor's records.

Error ratios established through cross-checking with the doctor will be used to weigh or qualify data obtained door-to-door. Although under the law the survey is authorized to get information on medical costs, Dr. Linder says this will not be attempted, at least not for the present.

Proposed Hill-Burton Changes

In line with his views regarding separation of church and state, Rep. Siler (R. Ky.) in H.R. 3103 proposes to limit Hill-Burton hospital construction grants to governmental institutions, thereby eliminating grants to religious or other private but nonprofit groups that now benefit. . . . Senators Malone (R.) and Bible (D.) of Nevada want the Hill-Burton law changed so 50%

of the money allocated for the "new" part of the program — chronic disease facilities, rehabilitation facilities, diagnostic-treatment centers and nursing homes — could be used for the "old" hospital program, mainly general hospitals. Only states with populations of less than 700,000 would be given the privilege. The Malone-Bible bill is S.599.

Labor Sets Goals on New Health Legislation

The Executive Council of the AFL-CIO, before concluding its meeting last week in Miami Beach, adopted the report of the social security committee which fixes the policy of organized labor on health and welfare issues. Taking a realistic approach, the Council confined its legislative recommendations to objectives whose attainment this year or next is quite within the realm of possibility. It did not even mention compulsory national health insurance. What this country needs, according to labor's policy-making body, are the following:

Federalized hospital and nursing home care for persons receiving social security retirement benefits; also,

extension of hospitalization and surgical services to recipients of OASI survivor benefits.

Government grants for construction, expansion, equipment and maintenance of training and research facilities in schools of medicine, dentistry, nursing and ancillary professions. Also, establishment of undergraduate scholarships.

Grants and low-interest loans to stimulate development of direct service, nonprofit medical care prepayment plans.

Contributory medical care insurance for Federal employees and their dependents, with the U. S. bearing at least 50 per cent of the premium cost.

Folsom Defends Greater U. S. Budget for Welfare

Deep cuts in appropriations for medical activities — notably research grants in aid — of the Federal government are in the making. Three days after his first appearance before a House subcommittee to explain why his Department will require \$2.8 BILLION in 1957-58, Secretary of HEW Marion B. Folsom held a hastily called news conference to defend increased budget-

ing for health, education and welfare programs. Mr. Folsom seldom holds news conferences — this one was No. 1 of 1957 and his first in months. There could be but little doubt that his decision to go to the people — via the press — with his budget problems was prompted by danger signals raised earlier in the week on Capitol Hill indicative of impending reductions in funds.

Oscar Ewing Again

Most controversial of the "help the aged" bills is one originally proposed by the then Social Security Administrator, Oscar Ewing, in 1951. It would allow 60 days a year of government-paid hospitalization every year

for persons covered by OASI after they reach age 65. They could have this free service whether or not they were on retirement.

State Payments for Medical Care for the Needy

With 18 Republican and Democratic co-sponsors, Senator Paul Douglas (D., Ill.) again is backing a bill (S.1209), which barely missed passage last year, whose

purpose is to encourage state payments for medical care of the needy without impairing payments for food, housing and other essentials.

Voluntary OASI Coverage

Rep. Henry S. Reuss (D., Wis.) introduced H.R. 4824, authorizing *voluntary* social security coverage for self-employed physicians and dentists. He sponsored an identical bill last year. In reintroducing the measure, he inadvertently neglected to strike out the dentists,

who have now been brought under social security on a *compulsory* basis. This bill is filed as a courtesy to Milwaukee physicians and has no chance of passage or even committee consideration.

Plan Medico-Legal Symposium in March

Plans have been announced for a meeting to be held on March 29-30 at Philadelphia, Pennsylvania.

Some of the subjects to be included are: trauma and disease, medical expert testimony, the medical witness, and a mock trial demonstration concerning the introduction in court of the results of chemical tests for intoxication.

Plans are being made for an audience of between 300 and 350 divided as evenly as possible between

physicians and attorneys. The registration fee for the conference will be \$5.00. This amount will cover the cost of one luncheon and any proceedings of the meeting that are published.

Attendance at this meeting must be somewhat limited. Therefore, anyone interested in attending should register in advance and as soon as possible with the A.M.A. Law Department, 535 North Dearborn Street, Chicago 10, Illinois.

7,686 Students Enter Medical Schools

Medicine as a profession still has a strong appeal among young people. A recent report by the American Medical Association shows that 7,686 students, a record

number, entered medical schools in the 1955-56 academic year. Of this number, 5,753, or 75 per cent, had four years of college education.

Many Students Enter Medical School with "C" Average

You don't have to be a "brain" to get into medical school.

The American Medical Association in a recent report shows that 13.6 per cent of the students who entered the nation's 76 approved four-year medical schools during the 1955-56 academic year had a "C" college grade average.

Over a six-year period, 70.6 per cent of the entering students had a "B" average while, over the same period, only about 15.8 per cent of the entering classes had the enviable "A" average.

"College academic achievement as measured by scholastic records is only one factor among many utilized in the selection of medical students," the report said.

Most Medical Students Subject to Military Service

Military service hangs like a sword over the lives of students enrolled in the country's 76 approved four-year medical schools.

A recent report by the American Medical Association disclosed that 81.5 per cent of all male students enrolled in medical schools during the 1955-56 academic year were subject to military liability. The number

cited as liable for service makes no allowance for physical disabilities and other factors that would render an unknown percentage ineligible for service.

In the 1955-56 year, male students with military liability constituted 81 per cent of the first year class, 82 per cent of the second year, 82.5 of the third year, and 80 per cent of the fourth year group.

Stem Pessary Outlawed by FDA as "Dangerous"

The FEDERAL REGISTER will carry a statement by the Food & Drug Administration warning that stem pessaries are dangerous and their use, sale and shipment should be halted at once. The industry has been advised to take this device out of the interstate market on penalty of court action. FDA's position is that

"stem-type and wing-type intracervical and intrauterine pessaries are dangerous to health and regardless of their labeling may be shown to be misbranded."

The agency's action is *not* applicable to other types of pessaries prescribed for use following surgery and for supportive purposes, it was emphasized. Late

in 1955, and FDA investigator canvassed 187 ob-gyn specialists on their views of the stem pessary as a contraceptive device. Ninety-two per cent of the 124 physicians responding condemned it as dangerous. Infections and injuries were associated with its use in

many instances, they reported, and it lacked dependability as a pregnancy preventive. Since 1941, FDA regulations have made medical supervision a requisite to its use but latest action, in effect, outlaws the stem pessary under any circumstances.

Correspondence

Veterans Administration Center
Togus, Maine

TO: Members of the Maine Medical Association

The Veterans Administration is changing the method of authorizing treatment to fee basis physicians. In certain types of cases selected by the Veterans Administration, authorizations for treatment will be issued to physicians on a yearly basis, i.e., July 1 to June 30 instead of the month to month authorization as is now being done.

The physician will submit his bill at the end of each month on his own letterhead in order that monthly payments may be made by the Veterans Administration. The bill will consist of an itemized statement of account and will bear the required certification, "I certify that the above bill is correct and just and that payment therefor has not been received.", and will be signed by the physician.

Treatment reports on the other hand need to be submitted only once every three months unless for some exceptional reason the Veterans Administration needs a report before the three months has expired. These clinical reports must be more meaningful and complete than has been generally the case in the past and must contain an adequate history, examination findings, diagnoses,

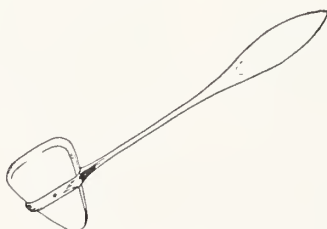
detailed description of the treatment regimen, and include medication prescribed, dosage, and frequency.

Treatment of the veteran's service-connected disability must be appropriate to the type of disability for which services have been authorized, and the frequency of treatment will be based upon the actual needs of the veteran. If for any reason treatment is discontinued, the physician should notify the Veterans Administration without delay.

Failure on the veteran's part to keep appointments and/or to cooperate, or failure on the physician's part to submit complete reports as outlined above will result in the immediate suspension of this type of authorization. Should such action become necessary, monthly authorizations may be reinstituted.

By this change in procedure, it is anticipated that (1) better service to veterans will be provided; (2) working relationships between the Veterans Administration and fee basis physicians will be improved; and (3) more adequate clinical reporting will be secured.

LORRIMER M. SCHMIDT, M.D.
Chief, Outpatient Service





DEAN H. FISHER, M.D.
COMMISSIONER

State of Maine

Department of Health and Welfare

Summary Of Nursing Home Study

VANCE G. SPRINGER, *Director*
Division of Research and Statistics

Detailed information regarding the 221 nursing homes in Maine referred to in the August (1956) issue of the Journal as a medical resource with increasing potential value as an adjunct to general hospitals is summarized in this article. The complete report on "Nursing Homes in Maine" was printed in mimeographed form in December, 1956 by the Department of Health and Welfare from information secured through the cooperative efforts of members of the Maine Medical Association, the Nursing Home Association of Maine and the Maine Committee on Aging.

Many members of the medical profession have indicated for some time their convictions that properly operated nursing homes can serve an invaluable purpose in making hospital beds available for the acutely ill and for emergency cases — plus the important advantage of nursing homes and general hospitals providing an opportunity for a ready exchange of patients from one to the other under medical supervision.

Another important purpose of the study was to obtain factual information that would be useful for possible consideration of extension of the present hospital pool plan for Public Assistance recipients, Old Age Assistance, Aid to Dependent Children, Aid to the Blind, and Aid to the Disabled in nursing homes.

Maine law provides that all hospitals and related institutions must be licensed. Included under the title of related institutions are nursing homes, convalescent homes and rest homes. For the purpose of this report, the term "Nursing Home," embraces all three of these related institutions.

GENERAL CHARACTERISTICS

In July 1956, there were 221 licensed nursing homes, convalescent homes and rest homes in Maine, with 2,963 available beds and serving 2,370 patients. About three-fifths of these establishments are concentrated in the five counties of Androscoggin, Cumberland, Kennebec, Penobscot and York. The remaining two-fifths are scattered in the remaining eleven counties. The num-

ber of establishments ranges from one in Washington county to thirty-six in Cumberland county.

The range in the number of beds per nursing home is from one to 225. The average is about 13 beds per nursing home. About 16 per cent of the homes had fewer than five beds, while 72 per cent of the homes had less than 15 beds. For the State as a whole, there are approximately 3.2 nursing home beds per 1,000 population. These beds are, however, very unequally distributed throughout the State. Aroostook, Somerset and Washington counties have less than one bed per 1,000 population. At the other extreme, Kennebec county has 7.3 and Androscoggin county 6.0 beds per 1,000 population.

The number of rooms for patient use ranges from one to 92. About 31 per cent of the homes have less than five rooms occupied by patients and an additional 50 per cent are occupying less than ten rooms. The number of beds per room averages 1.8.

With few exceptions nursing homes are wood frame buildings originally built as private dwellings, and all but two of the 194 homes for which data are available are operated under private commercial ownership. Historically, the predominance of small proprietary nursing homes is a resultant of the convergence of social and economic circumstances during the past 20 years. The extension of the life span, sharp increases in the aged population, changes in family structure which have tended to shelve older people, the growing prominence of chronic diseases, together with a new philosophy of public welfare which provides a money payment to the needy, have resulted in an expanded need for private living arrangements for the aged.

To meet this need, people often with some skill, such as nursing, recognized the opportunity for a proprietary venture and opened the doors of the family home not otherwise fully occupied. Many of the homes started as boarding homes, and as the needs of their aging residents demanded, varying degrees of nursing care were provided, and thus developed into nursing homes.

PATIENTS' CHARACTERISTICS

Patients in nursing homes range in age from 2 to 100 years. The median age for males is 78 years and for females 81 years. For both groups the median age is 80 years. More than two-thirds (68 per cent) of the patients are age 75 or older. The ratio of females to males is about two to one.

The median length of residence of patients in nursing homes in the survey month is 1.3 years. One out of three patients has been in the nursing home less than 6 months. Nearly one out of eight has been in the nursing home for 5 years or longer.

AGE AND SEX OF PATIENTS IN NURSING HOMES

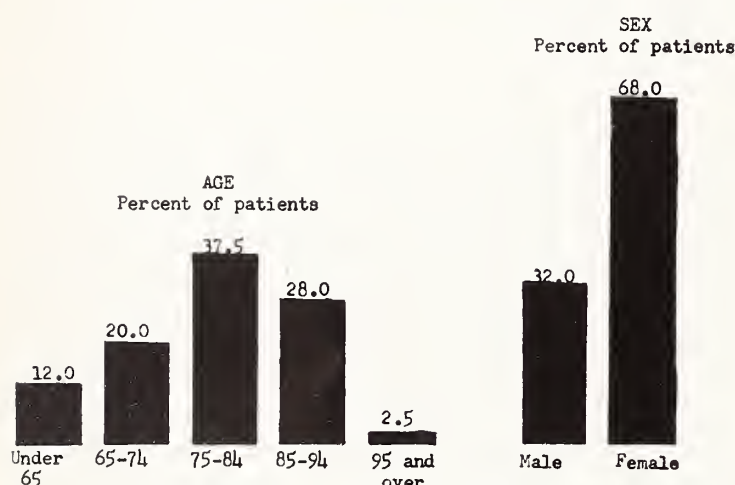


CHART A

Most of the patients, as would be expected from their advanced age, are widowed (60 per cent). Nearly one-fourth (24 per cent) are single. About 11 per cent are married, while the remaining 5 per cent have lost their spouse through divorce or separation.

PHYSICAL AND MENTAL CONDITION

Nursing home proprietors were asked to report the kind of care needed by the individual patients scheduled in the survey. Nearly three out of five patients (58 per cent) are reported to need the kind of nursing care that ordinarily would not be expected to be given in their own home even with relative's help available. One third of the patients need the kind of nursing care which might have been given at home, if the patient had such a home with relatives available to help. Nine per cent of the patients require mainly boarding care.

One-half of the patients are out of bed except to sleep or rest while 23 per cent are bed-fast all of the time. The remainder are in bed either part of the time or most of the time.

More than two out of the five patients (45 per cent) are able to walk by themselves or walk with the aid of a cane or crutch. One-third of the patients neither walk nor wheelchair themselves about. The remaining patients walk only with the help of an attendant or get about by the use of a walker or wheelchair.

Less than half (48 per cent) of the patients are mentally clear at all times. One out of four are reported to be mentally confused part of the time. The remaining 27 per cent are confused all of the time.

Patients in nursing homes, according to the primary diagnosis listed on the schedule, required care for a wide variety of disabilities. Since the diagnosis was not given in detail only a very broad classification of morbidity has been attempted. The largest group of patients are those with hemiplegia, mainly from stroke (21 per cent). Senility is a second major impairment of patients (20 per cent). Many of these patients are reported to have senile psychosis.

Heart disease is a third major disability among patients with 18 per cent falling in this classification. Fractures, mainly of the hip, are found in 9 per cent of the patients, arthritis and rheumatism in 6 per cent. disease of the nervous system and sense organs, except hemiplegia, neoplasms and diabetes in 4 per cent each. All other primary diagnoses made up 11 per cent. Three per cent of the patients were reported to have no illness or disability that would require the need of nursing home care.

Chart B shows the per cent of patients with selected characteristics, and also shows the range in these characteristics found in a survey of nursing homes conducted by the U. S. Public Health Service and the Commission on Chronic Illness in nine states during 1953-54.¹

Services received. As may be seen from Table 1 on page 96, a majority of the patients receive bed baths, rub and massage, and medications. Taking of temperature, pulse or respiration is also provided for a majority of the patients. Bedpan service and enemas are given to a large proportion of the patients, while hypodermic injections and dressings are a less common procedure.

Personal services, that is, help in feeding, dressing, bathing, toilet and help in getting in and out of bed were reported as heavy responsibilities of the nursing home staff. One out of ten of the patients was reported to receive none of these services.

Physicians attendance. More than half (54 per cent) of the patients were reported to have been seen by a physician at home, at the office, or at a clinic in the 30 day period preceeding the study month. About four out of five patients were reported to have seen a physician within a 6 month period. Another 8 per cent were reported to have seen a physician in a period ranging from 6 months to over two years.

Cost of care. Charges for nursing home care range from \$50 to \$455 a month. The median monthly rate for care is \$133. One-fifth of the patients are paying for care at a weekly rate of \$35, and about an equal proportion are paying for care at a weekly rate of \$25.

For patients who are out of bed except to sleep or

1. "Patients in Proprietary Nursing Homes" by Jerry Solon and Dean Roberts, M.D.

CHART B

CHARACTERISTIC	Maine	Range in Characteristics Found in Nine State Survey
<i>Age</i>		
Median age (years)	80	78.0 — 81.0
<i>Per cent of patients¹</i>		
65 years or over	88	80.3 — 90.9
85 years or over	31	19.3 — 28.6
Sex Females	68	50.0 — 72.8
<i>Level of care needed</i>		
Absolutely requires nursing home care	50	16.2 — 73.0
Is hypothetically possible in own home if patient had home with relatives to help	33	17.8 — 69.4
Is essentially boarding care	9	5.3 — 15.2
<i>Bed status</i>		
Out of bed except to sleep or rest	50	
In bed part of the time	14	
In bed most of the time	13	
In bed all of the time	23	12.0 — 34.0
<i>Walking status</i>		
Walks alone or with no more help than cane or crutch	45	31.4 — 58.2
Moves himself about with a mechanical aid, such as walker or wheelchair	6	4.1 — 10.1
Walks only with the help of an attendant	16	9.1 — 20.2
Does not walk or wheelchair himself about	33	17.1 — 44.3
<i>Mental condition</i>		
Always clear	48	
Confused part of the time	25)	
Confused most of the time	27)	47.0 — 60.0
<i>Continence</i>		
Incontinent	32	27.0 — 43.0
<i>Diagnosis</i>		
Hemiplegia (mainly from stroke)	21	0.8 — 24.0
Senility	20	12.6 — 35.4
Heart disease	18	6.5 — 15.8
Fractures (mainly hip)	9	6.3 — 11.1
Arthritis and rheumatism	6	5.5 — 7.9
Diseases of nervous system and sense organs (except hemiplegia)	4	2.7 — 7.9
Neoplasms	4	0.6 — 4.3
Diabetes	4	1.2 — 4.4
All other primary diagnoses	11	6.9 — 22.4
No diagnosis	3	1.2 — 8.9

1. Percentages based on number of patients for whom characteristics were reported. Unknown or not reported data have been excluded.

<i>Kind of Care</i>	<i>Per cent of Patients</i>
Nursing services received	
Full bed bath	58.6
Rub and massage	76.5
Bed pan	45.9
Enema	30.7
Hypodermic injection	20.2
Dressings	10.0
Medications	71.8
Take pulse, temperature or respiration	53.6
Personal services received	
Help in feeding	24.1
Help in dressing	41.8
Care of hair	66.2
Shaving (men only)	66.0
Help with tub or shower	34.6
Help getting in and out of bed	35.6
None of the above services received	10.0

TABLE 1

rest the median monthly rate is \$107, compared to \$138 for patients in bed part of the time, and \$152 for patients in bed most of the time. The median charge for patients in bed all of the time is \$150, or slightly less than for those in bed most of the time. The lower rate for bed-fast patients is not readily explainable, although it is probably influenced by the degree of skilled nursing care the home is able to provide and the ability of the patients to pay. Ability to pay is an important factor in the monthly charge since the median monthly rate for public assistance recipients, who constitute the largest single group in nursing homes, is found to be \$108 per month compared to \$133 for all patients.

Source of funds. The largest single group of patients in nursing homes (37 per cent) are recipients of one of the special types of public assistance, that is, old-age assistance, aid to the blind and aid to the disabled. In addition more than a fourth (26.6 per cent) are being assisted by the cities and towns either through supplementation of public assistance grants, supplementation of other income or by full payment for their care in the home. Nearly a third (31.9 per cent) are paying at least part of the cost of care from savings and more than a quarter (26.4 per cent) of the patients are being assisted by relatives.

Staff. Staff providing direct nursing care to patients ranges from one to 37, and averages one employee for every three patients. For more than a fourth (27 per cent) of the homes only one person is providing nursing care, usually the proprietor of the home.

Information on staff providing direct nursing care to patients was incomplete for a number of homes, so that the data on training, duties and hours of work of the staff are subject to some limitations. Of the 192 proprietary homes, two did not report any information on employees and in 11 additional homes information was incomplete for some of the employees.

Of the 190 proprietary homes for which information is reported, 69 homes are providing nursing service by graduate nurses only, either on a full-time or part-time basis. In 24 homes only licensed practical nurses are on duty, while in 6 homes both graduate nurses and licensed nurses are employed. Thus a total of 99 homes are providing nursing services by trained personnel.

Of the 75 proprietary nursing homes with graduate nurses nearly three out of four of the homes provide full-time care by all the nurses on their staff. The remaining homes provide either only part-time nursing service or a combination of full-time and part-time nursing service to patients.

SURGERY IN ELDERLY PATIENTS — *Continued from page 87*

- 4. Precise and reasonably rapid surgery should be practiced. Prolonged operating time is poorly tolerated by elderly people.
- 5. The postoperative care of elderly patients is more important than in younger age groups. Signs of physiological dysfunction must be energetically treated.

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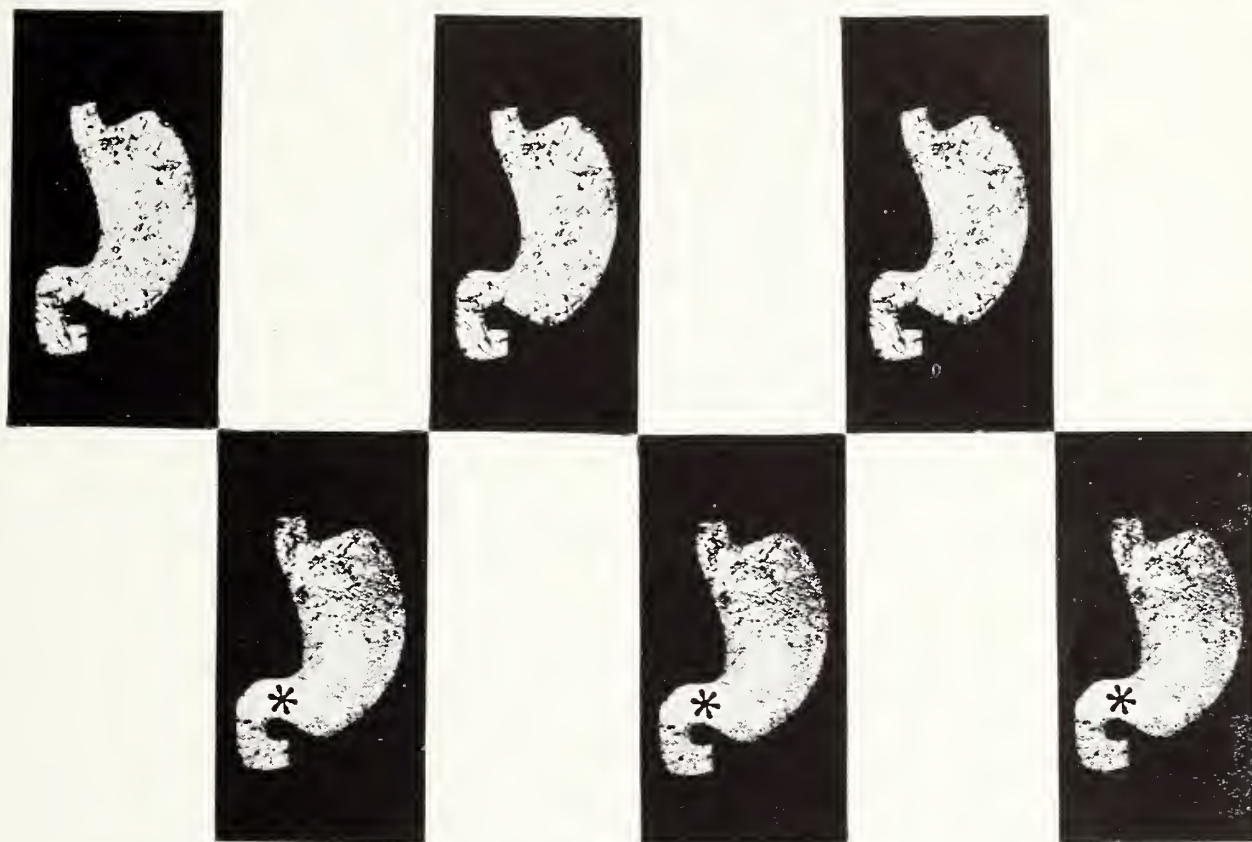
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TRUE ANTICHOLINERGIC ACTION

Pro-Banthine® Inhibits Excess Parasympathetic Stimuli in Peptic Ulcer

Medical literature now contains more than 500 references to the beneficial role of Pro-Banthine Bromide (brand of propantheline bromide) and Banthine® Bromide (brand of methantheline bromide) as evidenced by a marked healing response of peptic ulcers. Rapid symptomatic improvement, particularly with reference to pain relief, is followed by roentgenographic demonstration of crater filling.

The therapeutic action of Pro-Banthine in

decreasing hypermotility and hyperacidity, together with the remarkable early subjective benefit, is a desired approach in the management of ulcers.

The initial suggested dosage is one tablet, 15 mg., with meals and two tablets at bedtime. An increased dosage may be necessary for severe manifestations and then two or more tablets four times a day may be indicated. G. D. Searle & Co., Chicago 80, Illinois, Research in the Service of Medicine.

SEARLE

County Society Notes

AROOSTOOK

JANUARY 30, 1957

The winter meeting of the Aroostook County Medical Society was held at the Van Buren Hotel, Van Buren, Maine. The President, Stephen S. Brown, M.D., of Mars Hill, called the meeting to order. The attendance which totalled 52, included 21 members, 17 members of the Woman's Auxiliary and 14 guests.

Linus J. Stitham, M.D., of Dover-Foxcroft, Chairman of the Health Insurance Committee of the Maine Medical Association, discussed proposed changes in Blue Shield Plans, which will be considered by the House of Delegates at the interim meeting on April 14 at Brunswick.

Charles W. Steele, M.D., of Lewiston, Chairman of the M.M.A. Civil Defense Committee, explained with charts and slides the designated critical target areas with special emphasis on county problems. The effects of detonation of the H-bomb were described and the need for greater effort and participation of every doctor in CD work was emphasized. Evacuation and fall-out problems were described and a description of the effects of nerve gas warfare outlined.

Armand Albert, M.D., of Van Buren, President of the M.M.A., introduced the speakers.

Thomas G. Harvey, M.D., of Caribou, stated that a new 15-minute health program is to be sponsored by the local TV station. He requested the appointment of a two-man committee to assist other health agencies in preparing programs for these presentations. Dr. Harvey was appointed to this committee and instructed to name his associate.

The following committees were appointed by the President.

Public Relations Committee

Southern District — John D. Denison, M.D., Patten
Central District — Arthur P. Reynolds, M.D., Presque Isle
Northern District — Francois J. Faucher, M.D., Grand Isle

Medical Advisory Committee to Infantile Paralysis

Southern District — John B. Madigan, M.D., Houlton
Stephen S. Brown, M.D., Mars Hill
Central District — Thomas G. Harvey, M.D., Caribou
Robert A. Graves, M.D., Fort Fairfield
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Leonid G. Toussaint, M.D., Fort Kent

Vocational Rehabilitation Committee

Southern District — Eugene G. Gormley, M.D., Houlton
Clyde I. Swett, M.D., Island Falls
Central District — Philip Pines, M.D., Limestone
Storer W. Boone, M.D., Presque Isle
Northern District — Armand Albert, M.D., Van Buren
Romeo J. Levesque, M.D., Frenchville

Arthur K. Carton, M.D., of Houlton and Charles E. St. Pierre, M.D., of Van Buren, were elected to membership.

CLYDE I. SWETT, M.D.
Secretary

HANCOCK

FEBRUARY 13, 1957

The monthly meeting of the Hancock County Medical Society was held at the Hancock House in Ellsworth. There were fifteen members and two guests present.

Robert F. Russell, M.D., President, opened the meeting. The proposed changes in the Blue Shield Plans were discussed and the society favored adoption of Plan C.

Dr. Russell reported on a recent meeting in Bangor devoted to the State Polio Vaccine Drive. The society favors the widespread use of polio vaccine for all ages and will do everything possible to encourage its use. A committee was appointed to organize a polio vaccine drive for March and April and to confer with town officials about provision for free vaccine for those unable to pay. Llewellyn W. Cooper, M.D., is chairman, and Walter W. Herbert, M.D., and John T. Connell, M.D., members of the committee.

Armand Albert, M.D., President of the Maine Medical Association, asked the society to nominate one of its members to sit on a board which will decide on total disability applications for social security.

John Radebaugh, M.D., of Bangor, the speaker of the evening, gave a very interesting talk on Poisoning. He mentioned the value of the Boston Poison Information Center to the general practitioner, and discussed the use of replacement transfusions in severe cases.

ARTHUR M. JOOST, JR., M.D.
Secretary

LINCOLN-SAGADAHOC

FEBRUARY 19, 1957

The monthly meeting of the Lincoln-Sagadahoc County Medical Society was held at the Ledges Inn, Wiscasset. Thirteen members were present.

Stanley R. Lenfest, M.D., of Waldoboro, President, called the meeting to order. Specific problems were proposed for thought and discussion in preparation for the March meeting which will be devoted to proposed changes in Blue Shield contracts and other payment programs.

The society voted to recommend Rufus E. Stetson, M.D., of Damariscotta, to the Maine Medical Association House of Delegates for senior membership in the County Society.

Dr. Lenfest reported on a discussion last month in Brunswick relative to publicity and distribution of Salk vaccine. It was emphasized that local medical groups are responsible for this promotion in their own areas. A lively discussion followed about the pros and cons of public clinics, either free or at reduced rates, or giving inoculations in the office. Francis A. Winchenbach, M.D., proposed that each hospital staff in the area have a definite plan for poliomyelitis vaccine promotion for proposal to the County Society at the next meeting. The proposal was passed.

Carl Cassidy, M.D., of Boston, delivered a very useful and interesting address on the treatment of thyroid disorders.

GEORGE W. BOSTWICK, M.D.
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Necrology

Ralph W. Dennen, M.D.

1883-1957

Ralph W. Dennen, M.D., 73, of Tenants Harbor, died in the hospital in Rockland on January 15, 1957.

Dr. Dennen was born in Mechanic Falls on May 18, 1883, the son of Hollis E. and Gertrude Harding Dennen. He was graduated from Waltham High School in Waltham, Massachusetts, Harvard College in 1905, and Harvard Medical School in 1909. He interned at Massachusetts General Hospital and the Boston Lying-In Hospital.

Dr. Dennen was in General Practice for thirty years in Waltham and retired fifteen years ago at which time he moved to Tenants Harbor. He continued to practice medicine and was the only physician in active practice in the town of St. George when he died.

He was a Senior Member of the Maine Medical Association and the Knox County Medical Society and a member of the American Medical Association. Dr. Dennen was physician for the St. George Volunteer Fire Department and was on the Civil Defense staff of the county. He served as a captain in the Army Medical Corps during World War I and was a member of Kinney-Melquist American Legion Post and Eureka Lodge of Masons.

Dr. Dennen is survived by a son, William E. Dennen, Wellesley Hills, Massachusetts; two sisters, Mrs. Frank V. Carpenter of Dresden, New York and Miss Doris H. Dennen with whom he lived in Tenants Harbor; and three grandchildren.

THE MILK ALKALI SYNDROME — *Continued from page 75*

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Coming Meetings — Maine Medical Association

House of Delegates — Interim Meeting

Brunswick — Sunday, April 14, 1957

104th Annual Session — The Samoset, Rockland

June 23, 24, and 25, 1957

Tuberculosis Abstract

THE NEUROTOXIC EFFECT OF CYCLOSERINE was demonstrated in a study of 115 cases of far advanced tuberculosis. There were seventeen patients who experienced side effects sufficient to discontinue the medication. Eight of these had convulsions. The toxicity is, in part, related to the daily dose and, in all instances, appeared within three weeks of the initiation of treatment. This drug may have a usefulness in small doses in those few individuals who have failed to respond adequately to other regimes.

A Pilot Study of Cycloserine Toxicity. A United States Public Health Service Cooperative Clinical Investigation. Am. Rev. of Tuberculosis and Pulmonary Diseases, 74, 196, August 1956.

The Maine Trudeau Society, Medical
Section, Maine Tuberculosis Association

Announcements

All Physicians Welcome

The New England Obstetrical and Gynecological Society Meeting, Portland, Maine, May 8, 1957.
The Fourth Annual Tri-State Meeting of the Academies of General Practice of Vermont, New Hampshire and Maine — Clinical Session — May 9, 1957.

New York University Refresher Courses

A refresher course in allergic conditions will be given from March 25 through 27. For further information about this and other courses offered during each academic year write: The Dean, Postgraduate Medical School, New York University-Bellevue Medical Center, 550 First Avenue, New York 16, New York.

Maine Tuberculosis Association Annual Award

A medal for recognition of persons rendering outstanding service in health work to the people of Maine, will be awarded annually by the Maine Tuberculosis Association, according to Frank W. Barden, M.D., president of the association.
The medal, to be known as the Roselle W. Huddilston Medal, is named for an Orono woman who has given more than 35 years of voluntary work to the Maine Tuberculosis Association and its affiliated local group, the Orono Nursing Service.

Criteria for the medal award is established for either of two classifications of health workers: volunteers in health including physicians and nurses, business men and women, educators, government workers, etc.; and persons employed in health or related fields who make distinguished contributions to health above and beyond the call of their ordinarily defined duties and responsibilities.

Tufts University School of Medicine Postgraduate Courses Electrocardiography II May 13-15, 1957

This is a three-day continuation course planned especially for those who have taken Electrocardiography I or have had previous experience in the interpretation of electrocardiograms. Heinz Magendantz, M.D., is in charge. Tuition fee: \$25.

Continued on next page

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May 1-4	Neurology	J. F. Sullivan, M.D.
May 9-11	Allergy	R. P. McCombs, M.D.
May 17-18	Selected Chest Radiology	A. Ettinger, M.D.

Applications for these courses must be made at least two weeks in advance to Postgraduate Division, Tufts University School of Medicine, 171 Harrison Avenue, Boston 11, Massachusetts. Fees payable upon application.

The Children's Hospital of Philadelphia
Short Refresher Courses
May and June, 1957

1. PEDIATRIC ADVANCES FOR PEDIATRICIANS AND GENERAL PRACTITIONERS. May 27 through May 31, 1957. Conducted by the Staff of the Children's Hospital of Philadelphia, in collaboration with the Department of Pediatrics of the University of Pennsylvania and the Staff of the Camden Municipal Hospital. Tuition — \$110.00
2. PRACTICAL PEDIATRIC HEMATOLOGY. June 3, 4 and 5. Conducted by Irving J. Wolman, M.D. and other members of the Hematology Department of the Children's Hospital, under the auspices of the Graduate School of Medicine, University of Pennsylvania. Tuition — \$75.00
3. BLOOD GROUP INCOMPATIBILITIES AND ERYTHROBLASTOSIS FETALIS. June 6 and 7. Conducted by Neva Abelson, M.D. and Thomas R. Boggs, Jr., M.D. of

the Philadelphia Serum Exchange of the Children's Hospital of Philadelphia, under the auspices of the Graduate School of Medicine, University of Pennsylvania. Tuition — \$50.00. Inquiries should be addressed to Irving J. Wolman, M.D., Children's Hospital of Philadelphia, 1740 Bainbridge Street, Philadelphia 46, Pa.

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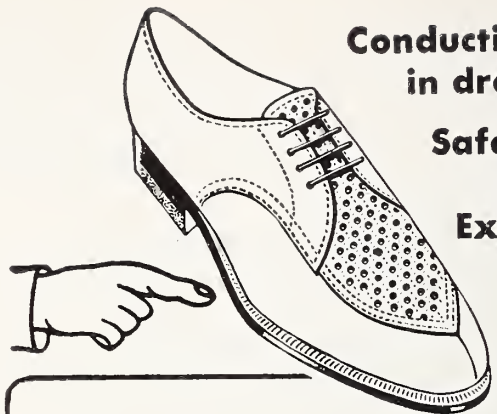
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The Journal of the Maine Medical Association

Volume Forty-Eight

Brunswick, Maine, April, 1957

Number 4

Poisoning From Petroleum Distillates The Hazards Of Kerosene And Furniture Polish*

A. BRADLEY SOULE, JR., M.D.
JOSEPH C. FOLEY, M.D.

During the last two decades, accidents have become the major cause of death among children over the age of one year.^{1,3,14} This is undoubtedly due in part to the control of pneumonia and communicable diseases by prophylactic procedures and the use of chemotherapeutic agents. More significantly, it is due to an absolute increase in the number of accidents in which children are involved. While improved methods of treating children who have been injured in accidents have resulted during the last few years in a slight lowering of the mortality rate in this age group, there is still an appalling number of children who die from poisoning, especially from accidental ingestion of drugs and other substances.

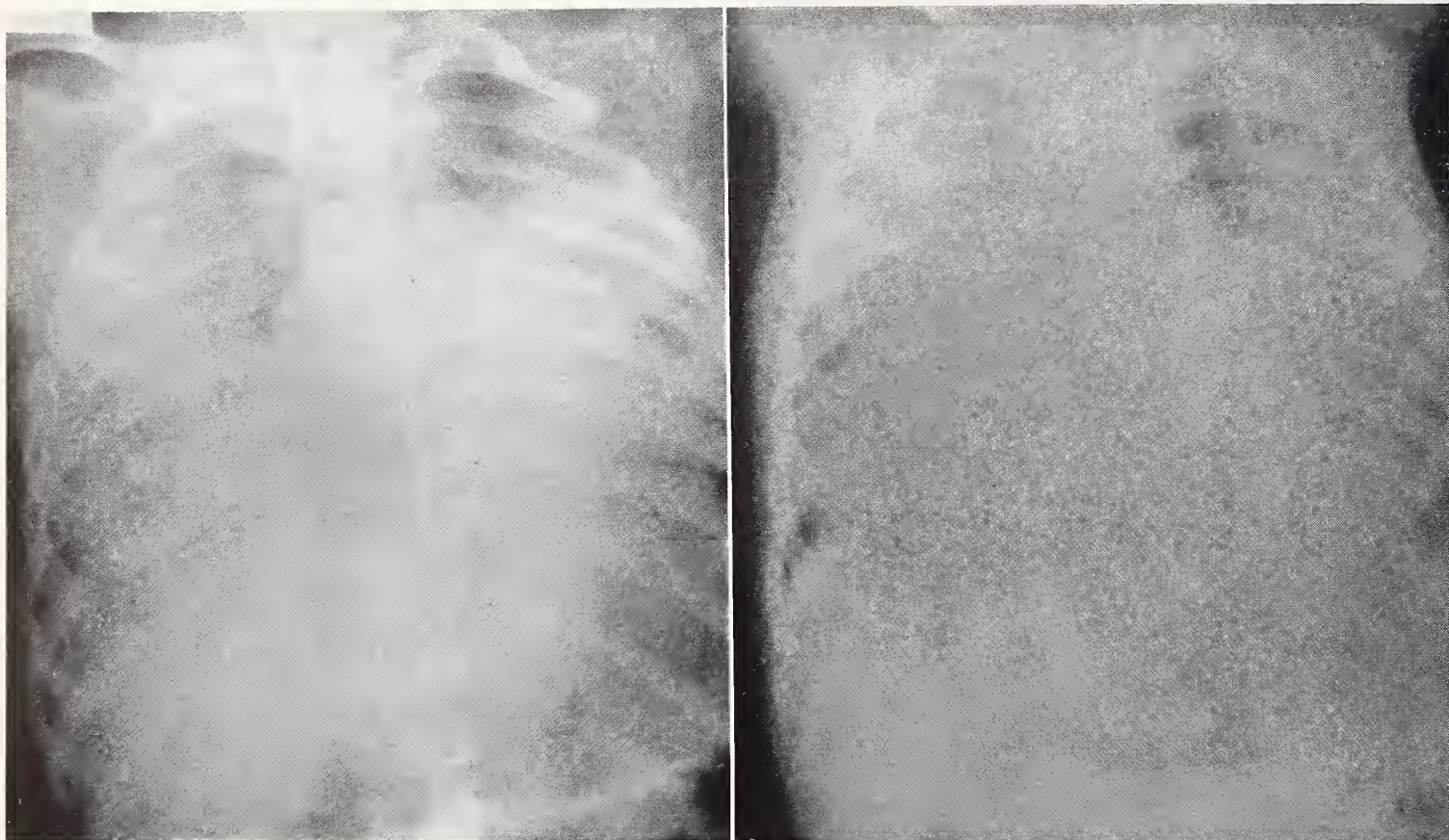
In many parts of the United States and especially in rural and semi-rural areas where kerosene and other forms of fuel oil are extensively used for heating and cooking, accidental ingestion of petroleum products is

the commonest form of poisoning. Kerosene is the principal offender but other substances containing petroleum derivatives, especially certain types of liquid floor polish, are not infrequently taken.

In a study made in northwestern Vermont in 1953,⁵ 101 children between the ages of eight months and two years were admitted to five hospitals following the accidental ingestion of kerosene. Since the publication of the report of this study, more than 60 additional cases have been hospitalized for the same condition. Three of the children have died—thus giving a mortality rate of slightly less than 2%. Among the more recent cases have been several children over two years of age but none over three. In other words, the children were old enough to be creeping or walking about the floor but they reached the age of discretion (as regards drinking of kerosene) at the age of two to three years.

One adult was seen who accidentally aspirated a small amount of kerosene while siphoning the fluid from a tank; he developed a mild pneumonitis but recovered within several days.

*From the Division of Radiology, University of Vermont College of Medicine and the Mary Fletcher Hospital and deGoesbriand Memorial Hospitals, Burlington, Vermont.



FIGS. 1 & 2. Radiographs of the two fatal cases of kerosene poisoning. Figure on left is radiograph of child 24 hrs. after accident and six hours before death. On right is radiograph of child 3 hrs. after the accident and 1 hr. before death.

FATALITIES

Two of the fatal cases were from kerosene poisoning — one a 19-month-old male infant who died thirty hours after drinking an unknown amount of kerosene from a can that was used to catch the drippings from a fuel line leading to the kitchen stove — the other a 15-month-old female child who died about four hours after drinking or aspirating kerosene from a can which had been used to light the kitchen range. These cases have been previously reported.⁵

In both instances, the children died from asphyxia — the alveoli filling rapidly with serous fluid.

Radiographs of the chest (Figs. 1 & 2) showed extensive areas of consolidation in both lungs.

Post-mortem examination of one of the children showed the lungs to be the sites of an extensive, necrotizing broncho-pneumonia. Both lungs were airless except for small areas of emphysema in the apices and in the lateral basal segments of the lower lobes. Histologically, the alveoli were filled with a serous exudate containing oil droplets, red blood cells and leukocytes; the alveoli were lined with a thin layer of fibrin — thus producing an "asphyxial membrane" (Figs. 3 & 4).

No gross abnormalities were observed in the gastrointestinal tract or abdominal viscera and the serous membranes were of normal appearance with no excess fluid. Histologically, the capillaries of the medullary portions of the kidneys were congested but no hemorrhages were found and the glomeruli were of normal

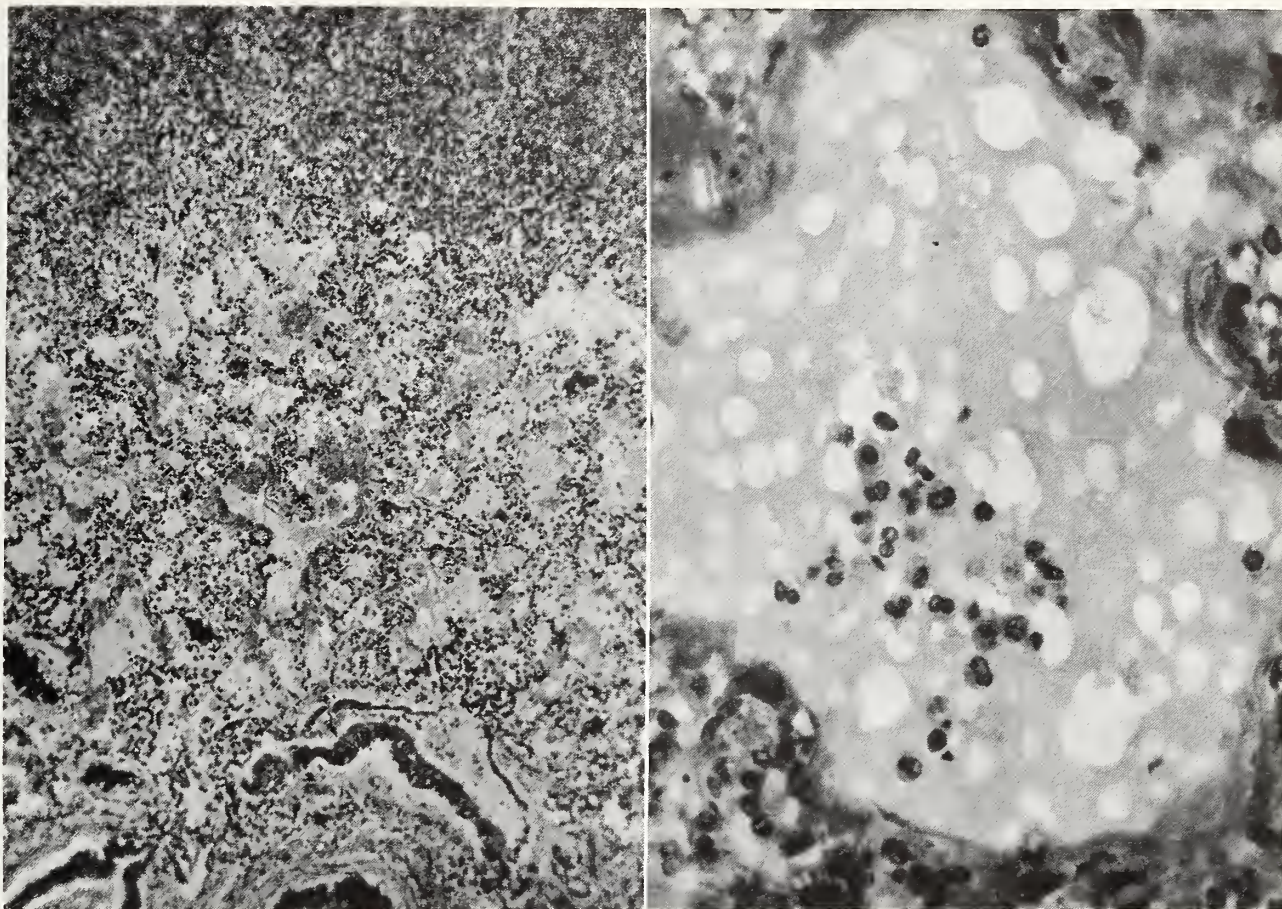
appearance; mild cloudy swelling was noted in the cells of the convoluted tubules. Sections of liver and spleen showed congestive changes and moderate edema; sections of stomach and intestinal tract showed no abnormalities — the mucosa being intact.

It was felt that all findings other than those in lungs and bronchi were probably due to toxemia and circulatory collapse. It is of interest to note that no oil droplets were seen outside of the lumen of the gastrointestinal tract and within the bronchial tree and alveolar air spaces.

The third death in the series was that of a 14-month-old male child who was admitted to the deGoesbriand Memorial Hospital about half an hour after having drunk about two ounces of Old English furniture polish. The child was found on the floor, choking and gagging with an empty jar of polish beside him. The child vomited twice and then became rather listless with slow and shallow respirations but without cyanosis.

After arrival at the hospital, the stomach was lavaged — this being followed by vomiting of food and oily material. The respiratory rate became extremely rapid — about 80 per minute and cyanosis appeared and deepened. The temperature rose to 103° and rales were noted at both bases. Chest radiograph taken on admission showed clear lung fields but one taken a few hours later (Fig. 5) showed areas of consolidation in the lower central lung fields.

The child's condition remained critical for the next



FIGS. 3 & 4. Photomicrographs (low and high power) show evidence of severe necrotizing bronchopneumonia. On right is an alveolus filled with hyaline material and oil droplets. Note "asphyxial membrane" lining the alveolar wall.

four days and then became gradually worse. Non-protein nitrogen was 21 mg.% on the fifth day. Daily chest radiographs showed evidence of progression of the bilateral pneumonic process with emphysema developing in the periphery of the upper lobes. The child died seven days after the accident.

Autopsy showed consolidation of the entire right lung and of the left lower lobe and presence of large emphysematous bullae in the left upper lobe. All other viscera were of normal appearance, grossly and histologically. Microscopic examination of the lungs showed an acute necrotizing pneumonitis, bilateral, diffuse and severe.

TYPICAL NON-FATAL CASES OF KEROSENE AND FURNITURE POLISH POISONING

Case 4. A 17-month-old female child was playing on the floor of the kitchen near an old-fashioned oil stove used for cooking. Kerosene used as fuel was conveyed from the storage tank to the burners of the stove by a copper fuel line, and as so often happens with heating units of this type a leak had developed at the turn-off valve and a tea-cup had been placed on the floor to catch the drippings.

The child's mother had stepped out of the room for several minutes when she heard the child choking and coughing. Rushing to the kitchen, she found the child lying on the floor with the empty cup beside her and

with kerosene on the face and clothing. The child vomited and quickly became stuporous and slightly cyanotic. The mother rushed the child immediately to the Mary Fletcher Hospital where she was admitted about forty-five minutes after the accident. Gastric lavage was performed immediately, this being accomplished without additional vomiting. Semi-digested food mixed with kerosene was recovered. Blood pressure was 90/50; pulse 120; respiration 36; rectal temperature 98.4 and blood count normal. The child was still drowsy but the color was nearly normal. Respirations were of the grunting type. A few rhonchi were noted at the left base but the lungs were otherwise clear to auscultation and percussion. Four hundred thousand units of penicillin were administered intramuscularly.

Chest radiograph (Fig. 6) taken within fifteen minutes of admission showed patchy areas of clouding scattered through the lower two-thirds of both lungs.

During the next three hours the child's breathing improved; she then became more restless and respirations more labored so she was placed in an oxygen tent. After about three more hours, there was sufficient improvement so that the child was removed from the tent. She continued to recover steadily and rapidly and about twelve hours after admission was clinically well, except for slight temperature elevation which persisted for another twenty-four hours. The patient was discharged from the hospital forty-eight hours after admission and

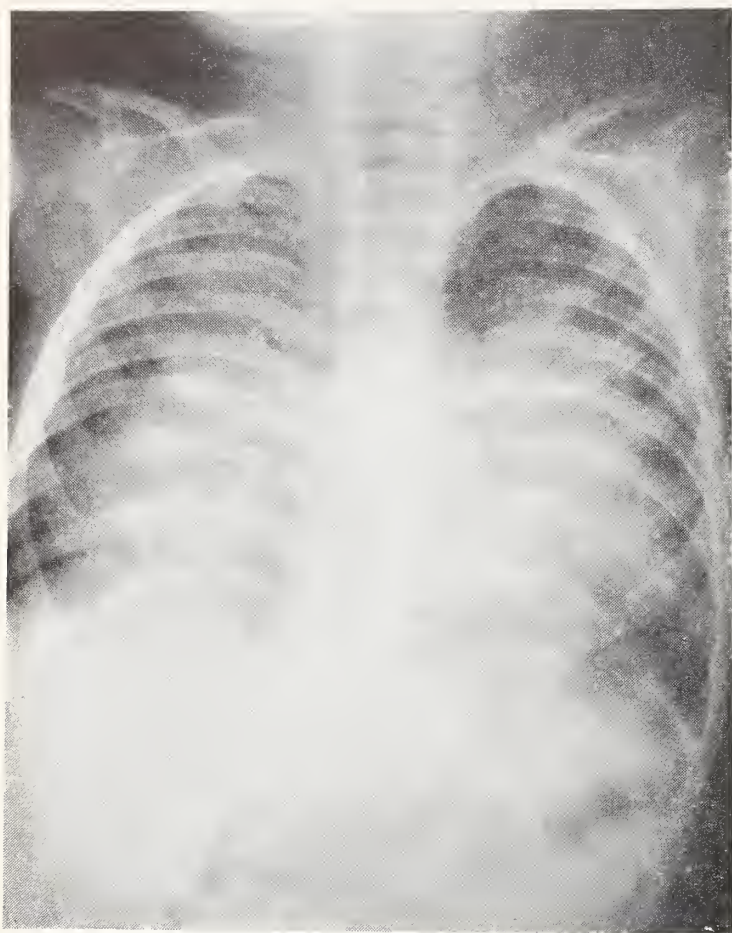


FIG. 5. Chest radiograph taken about 15 hours after ingestion of several ounces of liquid red furniture polish.

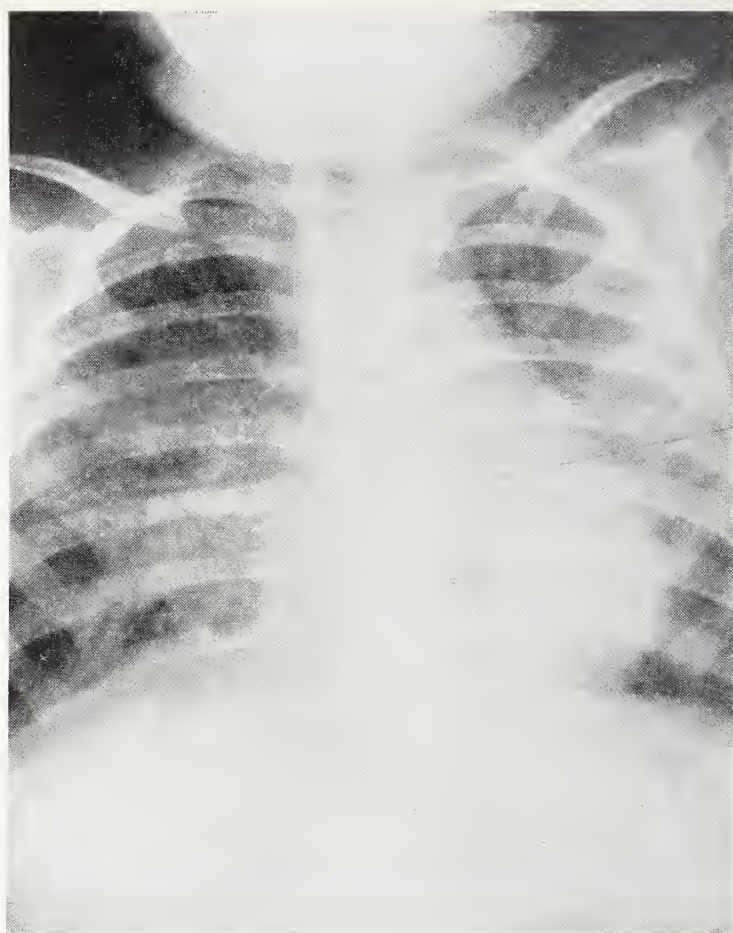


FIG. 6. Case 4. Chest radiograph one hour after ingestion of unknown amount of kerosene.

was followed for several weeks by home visits. Gant-risin,[®] 2.0 gm. daily for five days, was prescribed. Recovery was prompt and complete. The child has been seen a number of times since over a period of several years and has had no apparent sequelae.

The peak of involvement, as noted by serial chest radiographs, was reached three hours after the accident. During the next fifteen hours, very little change was noted radiographically although the patient was clearly out of danger at the close of this period. At the twenty-four hour examination, however, the extent of clouding had diminished by about 50%; at the thirty-six hour examination, only a few small patchy areas of clouding remained in the peri-hilar regions and bases. At the seven-day examination, there was still persistence of several small areas of density in the right lower lobe.

Case 5. An 18-month-old female child was found on the floor with an empty bottle of liquid red furniture polish and with polish on her face and hands. The mother estimated that the bottle had contained about three ounces. No symptoms were noted for about thirty minutes when the child vomited and her respirations became labored. She vomited once more about three hours later. The family physician examined the child and advised forcing fluids. She continued to have respiratory distress during the night and had two "oil bowel movements" during the next two days. Two days after the accident she seemed better with no fever

and with improved feeding. On the third day, fever returned with increased respiratory distress and anorexia. She was then admitted to the Mary Fletcher Hospital.

On admission, she seemed listless, cried weakly and appeared acutely ill with dry skin and apparent dehydration. There was slight dullness to percussion over the left chest anteriorly but no rales or rhonchi were heard. Pulse was 160, temperature 101°, respirations 64. Leukocyte count was normal; urine showed 2 + albumin and many casts. Blood urea nitrogen was 14 mg. %.

Roentgen examination of the chest on admission showed presence of patchy areas of consolidation in the left lower lobe, mainly in the basal segments and in the posterior basal segment of the right lower lobe (Fig. 7).

During the first six days in the hospital, the patient remained febrile with temperatures ranging between 100° and 102°. During the first night respirations became so rapid and pulse so weak that she was placed in oxygen for about twelve hours with some improvement. Chemotherapy with penicillin during the first few days made no change in her condition nor did Aureomycin[®] given on the third, fourth and fifth days, both orally and intravenously. Blood transfusions on the third and fourth days brought her hemoglobin from 10 to 12 gms. and she seemed improved. On the seventh hospital day, there was sudden defervescence over a four-hour period with concomitant dramatic improvement in her

general condition. Chest radiographs showed improvement but residual patchy clouding was still present. She was discharged two days later with normal temperature and with no symptoms. She was continued on Gantrisin® at home for a week.

One week later, she returned as an out-patient. No symptoms or clinical findings were elicited. Chest radiographs showed improvement but a few patchy areas of clouding persisted in both lungs.

Follow-up examinations nine months and thirty months later showed that the child had been asymptomatic and had made normal gains in development. Chest radiographs at both examinations showed no abnormalities.

EXPERIMENTAL STUDIES

The minimum lethal dose of kerosene and other petroleum products has never been determined accurately for human beings. In the three fatal cases reported above, the amounts of kerosene and furniture polish were unknown, but probably did not exceed 100 c. c. and in all probability were much less. In one case in Massachusetts¹² in which the child died from chemical pneumonitis and asphyxia about two hours after ingesting kerosene, it was believed that not more than 15 c.c. of kerosene was present in the container from which the child drank.

Although practically all observers are agreed that the greatest danger in petroleum product intoxication is pulmonary damage with asphyxia ensuing if sufficient lung tissue is affected, there has been variance of opinion as to the usual cause of pneumonitis. All are also agreed that if kerosene or certain other petroleum distillates are aspirated a rapidly fulminating broncho-pneumonia occurs even from very small doses — 1 to 5 c.c. in dogs, cats or rabbits. There is also agreement among observers that petroleum products taken into the alimentary tract by swallowing or by stomach tube may produce symptoms and signs of toxicity, especially cerebral depression, if the quantity is large enough (approximately 30 c.c. of kerosene per kilogram). There has been variance of opinion among certain observers, however, as to whether petroleum distillates are absorbed from the alimentary tract and, by hematogenous transfer, excreted in the lungs and elsewhere with consequent production of pneumonitis and other dangerous changes.

In an attempt to study the effects of kerosene in the alimentary tract, six different studies have been made,^{4,5,9,10,11,13} using rabbits, cats, dogs, rats and guinea pigs. Rabbits have been a favorite animal for study since there is an unusual separation of respiratory and alimentary tracts which make it supposedly impossible for material placed in the stomach to be regurgitated and aspirated into the lungs. With moderate doses of kerosene, rabbits become stuporous and drowsy; an occasional rabbit has died. Autopsies of such rabbits have shown no evidence of pneumonitis of the type noted with intratracheal injections.

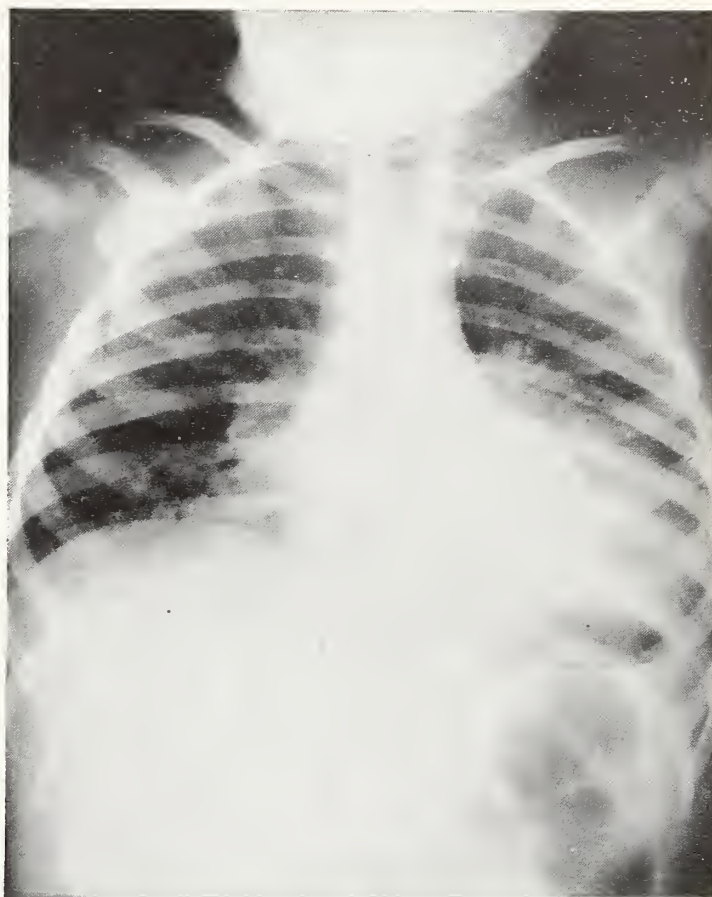


FIG. 7. Case 5. Chest radiograph four days after ingestion of liquid red furniture polish.

Deichmann and his associates,⁴ using large doses of kerosene by stomach tube (28.4 c.c./kilo in rabbits) produced death in one hour to six days — the animals showing evidence of pneumonia and severe toxic effects in other viscera. They believed that their findings indicated that kerosene was absorbed from the alimentary tract and carried through the circulation to lungs and other organs where it exerted the same effects as were noted in animals receiving kerosene by intratracheal, intraperitoneal and intravenous routes. It should be emphasized, however, that none of the other five groups of workers, including ourselves, have been able to substantiate their theory of absorption and subsequent hematogenous transfer to the lungs. None of the rabbits in our series, receiving quantities varying from 25 to 50 c.c./kilo by stomach tube, developed pulmonary abnormalities, either gross or microscopic. Many of the animals showed signs of moderate toxicity, reduced activity and stupor and, after being sacrificed at varying intervals, showed congestion of vessels of the brain, but only after administration of quantities of kerosene which would be comparable to administration of 250 to 500 c.c. of kerosene to a 10 kilogram baby — an unlikely quantity for a child to take.

One of the most significant studies was made by Richardson and Pratt-Thomas¹¹ who did most of their work on dogs. Intratracheal injections of 1 c.c. of kerosene/kilogram produced death from acute hemorrhagic pneumonitis within ten minutes of administration.

Kerosene was then administered by stomach tube to 17 dogs with quantities varying from 2 to 30 c.c./kilo. All of these dogs survived. Some of the animals vomited and most of these showed lung damage of varying severity — the lesions being unevenly distributed but predominantly in the lower lobes. Some of the animals did not vomit and none of the animals in this group showed evidence of pulmonary damage. Richardson and Pratt-Thomas believed that their experiments indicated that pneumonitis was due to aspiration rather than to absorption and hematogenous transfer of the oil.

In interpreting these findings in the light of clinical and roentgenologic evidence, the conclusion seems inescapable that, while there are undoubtedly toxic manifestations from absorption of either fractions of petroleum or impurities, the dangerous complication of violent pneumonitis is the result of aspiration. This may come from choking or gagging at time of swallowing, or may come from aspiration of vomitus or of gastric contents at the time of gastric lavage. We have known of no deaths which could be ascribed to cerebral depression or damage to kidneys, liver or other viscera. The roentgen findings of patchy clouding, largely confined to dependent portions of the lungs, and never characterized in patients or experimental animals by diffuse changes ordinarily associated with hematogenous disease, offers confirmatory evidence that the chemical pneumonitis is due to aspiration alone.

PATHOLOGICAL FINDINGS

As indicated above, in kerosene poisoning the characteristic lesion is an acute fulminating and hemorrhagic broncho-pneumonia which appears within minutes or several hours of exposure, reaches its height in three to twelve hours and then subsides slowly over a period of hours to many days in non-fatal cases. Marked congestive changes appear in the capillaries of bronchioles and alveolar walls and there is a rapid pouring-forth of serous exudate into the air spaces. A thin layer of fibrin forms along the alveolar walls, to which is given the name of "asphyxial membrane."

In poisoning from liquid furniture polish, the greatest damage is also to the lungs but the onset of violent symptoms is frequently delayed for minutes or hours and the effects of the toxic substance on the lungs is much more prolonged than with kerosene. Griffin, Daeschner, Collins and Eaton,⁷ reporting on fifteen cases of their own and two collected from the literature with two deaths in the series, noted that the initial radiographic finding may only be a generalized emphysema and that the inflammatory process becomes evident hours later — reaching its height about the third day and resolving over a period of three to six weeks. They emphasized that in general the course of illness of children ingesting red furniture polish is apt to be more severe than that observed in children who ingest other hydrocarbon products such as kerosene or lighter fluid.

COMPOSITION OF KEROSENE AND FURNITURE POLISH

Kerosene includes fractions of relatively low volatility obtained from distillation of petroleum at temperatures between 200° and 300° C. The purity of the product varies considerably, depending largely upon the point of fractionation and resulting inorganic material.

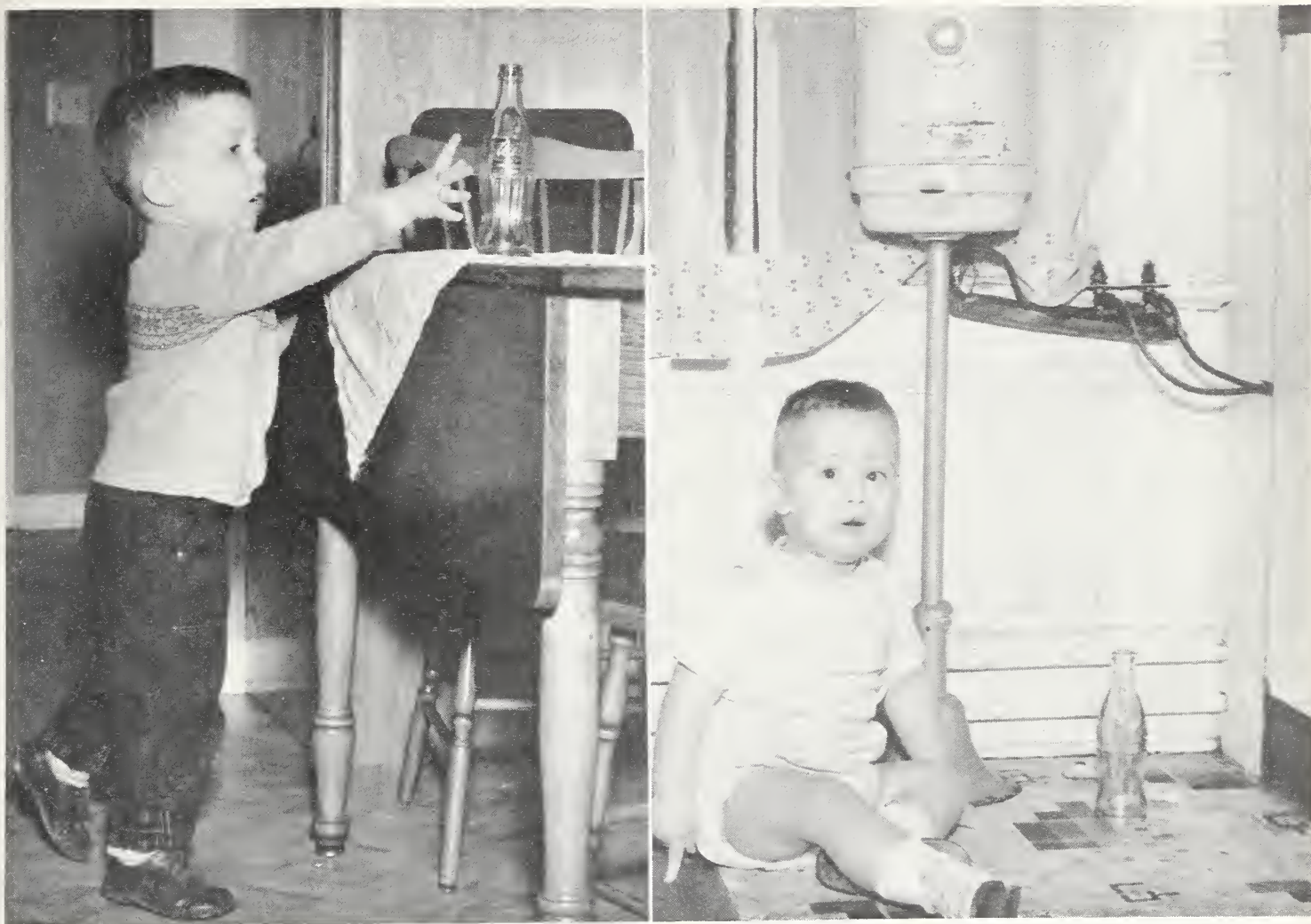
According to Griffin et al.,⁷ the basic constituent of red furniture polish is mineral seal oil which may constitute from 20 to 99 per cent of the volume of the finished product. Mineral seal oil is a light petroleum oil obtained as a fraction of distillate from crude petroleum in the range of 500° to 700° F. and contains aliphatic hydrocarbons of a higher molecular weight than those characteristic of gasoline or kerosene, as well as some cyclic and branched chain compounds. Synthetic lemon oil, citronella and other aromatic and coloring agents are usually present in the furniture polish but comprise less than 1% of the volume of the polish.

SOURCE OF KEROSENE

The "drip cup" is a potent factor in kerosene poisoning, many more than half of the cases resulting from children drinking from them. Such a container is usually small, always low down (often on the floor) and is used to catch the drippings from leaky fuel lines. Small amounts of kerosene are often kept handy for cleaning or kindling purposes in "coke" or "pop" bottles or in fruit jars. The child is accustomed to drinking from such containers and does not hesitate to drink any fluid from the same type of container (Figs. 8, 9). In some areas, especially in southern United States, as a cold remedy a corncob or rag cork from a kerosene jug is given to babies and young children to suck on. An old-time remedy for cough or sore throat in the form of kerosene on a lump of sugar has been credited with several cases of poisoning. In the Vermont series, one child drank from a can in the woodshed which contained kerosene used for soaking paint brushes; another drank from a cup of kerosene left on the table by the mother who had been using it in treating the child for nits. One child sucked kerosene from an open vent pipe of an oil stove; another child sniffed kerosene from a thirty-gallon drum from which the top was missing; another dipped his fingers in kerosene from the top of a feeder of an oil stove and sucked the kerosene from them for a period of about half an hour.

In a few instances the fuel oil was used for heating purposes rather than for cooking.

Contrary to what might be expected, there has been little if any relationship to seasons of the year in the incidence of kerosene poisoning. Carithers in reporting from Jacksonville, Florida,³ suggests that although there may be more kerosene in the child's environment in the winter, it is during the summer that he will be more likely to drink it because of thirst. He points out that an important principle in the prevention of poisoning from all toxic liquids in young children is that active youngsters should be given fluids between meals,



FIGS. 8 & 9. The kerosene hazard. All in the bottle is not "coke."

especially in hot weather, so that thirst will not be the stimulus to the consumption of liquid poison.

CLINICAL FINDINGS

As in the cases reported above, many of the children were found sitting or lying on the floor, choking, gagging or vomiting. A number of them were stuporous or unconscious when found or shortly thereafter. Dyspnea was noted in about half of them and cyanosis in about a quarter of the cases. Almost all had rapid pulse and respiratory rates and nearly all developed temperature elevations within a few hours.

Physical signs in the chest were meagre in most instances but approximately one-fourth of the children had rales, rhonchi and small areas of dullness to percussion, especially over the lung bases. An elevated leukocyte count, chiefly neutrophilic, was usually present. Acetonuria was found in most cases, this being more or less proportional to the toxicity present. Only several children in the series showed evidence of renal injury and then only traces of albumen and scanty red blood cells in the urine. Signs of renal damage were more prominent in the furniture polish group than in the kerosene cases.

ROENTGEN FINDINGS

In the Vermont series of children with kerosene

poisoning, roentgen examinations of the chest were made of 54 of the 101 children on admission or within the first few hours. 48 of the 54 children showed signs of patchy clouding of varying intensity — the extent and severity of x-ray changes being closely correlated with the degree of toxicity noted clinically. Clouding was noted as early as 30 minutes after the accident and in cases studied with serial roentgenograms this increased in extent and intensity over a period of four to six hours when it tended to become stabilized. The clouding tended to involve the basal segments of the lower lobes and less frequently the bases of the upper and middle lobes. The apices and outer portions of the lungs tended to remain free from damage and in no case was there noted an evenly diffuse process. Even in the fatal cases, the extreme apices were clear. In children with severe lung damage, zones of emphysema appeared apparently as a compensatory phenomenon. While others^{6,8,9} have described such complications as empyema, pneumothorax and pleuritis with and without effusion, none of the children studied by us showed evidence of such sequelae.

It was of interest to note that, with the exception of the fatal cases of kerosene poisoning and the two cases of furniture polish poisoning, all children were clinically improved within twelve hours after the accident and

most of them were alert and clinically well or nearly well within twenty-four hours. A number continued to run a low-grade fever for a few days. Most of those who had positive chest roentgenograms on admission showed slow regression of pulmonary shadows over a period of a week or more — x-ray improvement lagging far behind clinical improvement.

We felt it was prognostically significant that, if a child failed to develop serious clinical or roentgen signs of pulmonary damage during the first eight hours after ingesting kerosene, he recovered promptly without exception. We have therefore urged hospitalization and close observation of each child for at least twenty-four hours.

THERAPY

Oxygen was the single most valuable agent used especially in the treatment of respiratory distress and cyanosis. A few hours in an oxygen tent was usually sufficient to tide the child over the period of greatest danger.

Most of the children were given penicillin during their hospital stay, this being followed by Gantrisin® or other wide-spectrum antibiotics for a few days until the danger of secondary infection had abated. Cortisone has been suggested as a useful drug on theoretical grounds but none of the children in our series have received it.

The use of gastric lavage is one of the most controversial features of the treatment of kerosene poisoning. Although more than half of the children in our series were treated with gastric lavage, the trend in recent years has been to resort less and less to this procedure, especially if the child shows little or no evidence of toxicity when admitted to the hospital. It has seemed to many, including ourselves, that in most cases the risk of leaving kerosene in the stomach is less than the subsection of the children to the passing of a stomach tube with the consequent danger of aspiration of kerosene in gastric contents that may be associated with lavage. Moreover, in most instances, very little kerosene has been recovered in performing lavage. It is our impression that in most cases the major pulmonary damage occurs at the time of the accident from gagging and choking when the child tries to swallow the kerosene, or when vomiting especially in a semi-stuporous state. Several children in our series showed an alarming aggravation of toxic symptoms shortly after performance of gastric lavage especially when it was accompanied by vomiting. For what it is worth, there is also the fact that none of the children in whom gastric lavage was omitted died or developed serious symptoms.

On the other hand, there is the incontrovertible evidence that most petroleum products are relatively crude substances of highly variable composition and may contain impurities which in themselves are poisonous.

Studies are being made in a number of communities in which poisoning from petroleum products is common,

in which lavage has either been abandoned altogether or is being done on alternate hospital admissions. Until a sufficiently large number of cases has been collected and analyzed, one must reserve judgment on the wisdom of performance of gastric lavage as a routine measure.

It is suggested that if a liquid of uncertain composition has been swallowed or aspirated, a telephone call to one of the poison information centers in the country, such as that at the Children's Medical Center in Boston, will usually give information as to the composition of substances which are known to be toxic and suggestions as to the generally accepted methods of treatment.

PREVENTIVE MEASURES

As regards prophylaxis, there can be no disagreement. Kerosene, furniture polish, lighter fluid, and other petroleum products should be kept away from reach of small children and the public should be warned regarding their hazards. Leaky oil lines on cook stoves should be repaired or replaced; kerosene should not be stored in open containers or ones that can be opened easily by a young child.

It has been suggested that kerosene should be retailed only in distinctive, standardized-shaped metal containers not exceeding two gallons in size for household use — these to have spouts or lips and handles to allow easy adult use but which would be difficult for small children to handle. Containers should have permanent labels designating the contents as poisonous and flammable. A repellent color such as blue might be used to distinguish kerosene from water or other safe liquids.

Dealers, agricultural extension service personnel, teachers and others working with people who use petroleum distillates should be educated specifically in the toxicological hazards of these substances and should be encouraged to pass this information on to others.

All media for public information, including newspapers, magazines, radio and television, should carry the story until people generally are aware of the dangers to young children especially and do something about it.

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Recent Advances In Care Of The Newborn Patient

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This review article is concerned primarily with changes in attitude and knowledge which have occurred recently in the field of care of the newborn patient. A selective review of the literature has been attempted and those articles which the reviewer feels represent a significant change in current concepts have been chosen for comment. No attempt has been made to include the general field of resuscitation which has been reviewed thoroughly recently.^{1,2}

OXYGEN

Attitudes toward the use of oxygen in the premature nursery have changed greatly since 1950. The virtual disappearance of retrolental fibroplasia from premature units^{3,4} with the curtailed use of oxygen plus extensive experimental evidence all point to excessive use of oxygen as being the chief causative agent.

Definitive proof of this hypothesis has been furnished by the results of the Cooperative Study of Retrolental Fibroplasia.⁵ An undue emphasis has in the past been placed upon oxygen concentration and its relation to the development of retrolental fibroplasia.^{6,4} One frequently encounters the belief that concentrations of oxygen below 40% by volume are innocuous. In the Cooperative Study, of 104 infants who received oxygen but never in excess of 40% by volume, six developed retrolental fibroplasia. For all practical purposes there is no concentration of oxygen, in excess of that in air, that is not associated with a risk of developing retrolental fibroplasia. The length of time that the infant is kept in an oxygen-enriched environment appears to be the important factor in the production of retrolental fibroplasia. A policy of limiting the use of oxygen to clinical emergencies has been shown not to prejudice the survival rate of premature infants.^{4,5} The increased susceptibility of multiple birth infants of less than 2,000 grams to retrolental fibroplasia is not commonly realized.⁵

The excessive use of oxygen has also been thought by some to influence the development of kernicterus in prematures.⁷ It has also been implicated on the basis of animal experimental evidence in the development of so-called hyaline membrane syndrome.⁸ It apparently gives rise to elevated levels of non-protein-nitrogen in

the blood of prematures.⁹ It has been shown to cause liver necrosis in young rats.¹⁰ There is, therefore, no place for routine administration of oxygen in nurseries.

HYALINE MEMBRANE SYNDROME

Most neonatal deaths of premature infants are caused by abnormal pulmonary ventilation which is commonly accompanied by "hyaline membranes" found at post-mortem. It should be pointed out that the presence of a "hyaline membrane" in a surviving premature infant has not been demonstrated. It may well prove to be an "eosinophilic herring" as has been suggested by Gruenwald.¹¹

Recent review articles have covered the clinical and pathologic findings.^{12,13,14} An x-ray picture has been described which is quite helpful in the differential diagnosis between hyaline membrane syndrome and aspiration pneumonia.^{15,16,17} Therapeutic attempts have centered around the use of mist, wetting agents, and aerosolized enzymes. Acceptable evidence that these agents are helpful is not available.

Silverman and Andersen found no beneficial effect on respiratory symptoms, death rate, or autopsy findings in a group of 103 premature infants treated with mist, compared to a control group of 97 cared for in 90 to 100% relative humidity.¹⁵ A similar study carried out on a total of 200 premature infants also failed to show any therapeutic benefit which could be credited to Ale-vaire® mist therapy.¹⁹ Briggs has published similar findings that this agent is of no therapeutic value.²⁰ It is unfortunate that, on the basis of very inadequate evidence, this wetting agent has received widespread favorable publicity.

Recent evidence^{21,22} is heavily in favor of "hyaline membrane" being derived from a transudate from lung capillaries rather than from exogenous material aspirated into the alveoli.

Attempts to dissolve this membrane, if indeed it does exist in the early clinical phase of the syndrome, therefore, appear "about as futile as trying to cure faucial diphtheria by scraping the membrane off the throat."²²

JAUNDICE

Since "physiologic jaundice" has come under more careful study it does not appear to be an entirely benign condition. Recently there has been an increased awareness that kernicterus can occur, especially in premature

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infants, unassociated with erythroblastosis fetalis.^{23,24} The post-mortem incidence of non-erythroblastotic kernicterus reported from various premature units ranges from 1-20%. It has been reported as the leading cause of death in premature infants surviving the first three days of life.²⁴

The incidence of kernicterus in erythroblastosis fetalis has been shown to vary directly with the level of serum bilirubin.^{25,26} Its development with levels below 20 mg% being uncommon and its occurrence with levels above 30 mg% being common. One can expect that from 14-39% of all premature infants will have total serum bilirubin levels of over 20 mg% at some point during the first seven days of life.^{27,28} When the level of indirect serum bilirubin was over 18 mg%, kernicterus has been reported as developing in 60% of one series of premature infants.²⁹ This is an alarmingly high figure and this has not been the experience in other premature units, but further data on the point are needed. The wide difference between various premature units in death rates due to kernicterus is puzzling. They suggest that various "routine procedures" now thought to be benign should be carefully examined.

Silverman et al²⁹ found in a controlled clinical trial designed to test the effectiveness of two prophylactic antibacterial regimen administered to premature infants in the first five days of life, that those infants who received penicillin and Gantrisin[®] had a higher mortality than those who received oxytetracycline. The incidence of kernicterus was also significantly higher in the group who received penicillin and Gantrisin.[®]

In England several reports have appeared which demonstrate that excessive vitamin K therapy (10 mg/day) can cause hyperbilirubinemia^{30,31,32} and kernicterus.³³

In a series of 486 normal newborn infants on whom daily serum bilirubin levels were done 2% were found to develop levels or over 20 mg% and 9% had levels of over 15 mg%.³⁴

The need for careful observation of the jaundiced newborn and frequent serum bilirubin measurements is obvious. At present exchange transfusion is being recommended for levels of over 20 mg% which occur in the first week of life. Fortunately the umbilical vein remains usable for at least six days after birth.³⁵

Physicians should also be alert for other causes of neonatal jaundice. An infrequent cause for which a simple diagnostic test has recently been described is cytomegalic inclusion disease³⁶. Successful treatment³⁶ and survivors of this interesting entity are being reported.³⁷ A rarely considered cause of prolonged jaundice in infancy is hypothyroidism.³⁸

INFECTION

In almost any review of neonatal pathology infection will be found to account for approximately 10% of all deaths. The majority of these take place in the first few days of life and are considered intra-uterine in onset.

Hope for improvement in the treatment of this group of infants seems to lie along two lines of approach.

(1) Better Diagnostic Methods

A recent review article of neonatal septicemia³⁹ re-emphasizes the wide and non-specific variety of symptoms which may constitute the clinical picture. Attention is once again called to the high prevalence of gram-negative bacteria as the causative organisms. The high cure rate, 13 out of 15 cases in this series, obtained with the use of broad spectrum antibiotics is quite encouraging. At present in order to treat successfully neonatal infection one must have a very high index of suspicion and treat many infants who do not require therapy in order to benefit a few. A method which might improve our diagnostic accuracy has been suggested.⁴⁰ It is simple, requiring only a smear of the amnion and staining of the cells obtained. If amnionitis is present, as indicated by polymorphonuclear leukocytes or bacteria in the smear, the infant has emerged from an infected environment and would probably benefit from treatment.

(2) Prophylactic Treatment

Opinions vary widely as to the value of prophylactic treatment.^{41,42} Dicrysticin[®] (Penicillin and Dihydro Streptomycin, Squibb & Sons) administered to the mother prior to delivery and to the infant at birth was not effective.⁴³ In another series of patients, penicillin and Gantrisin[®] and oxytetracycline administered to prematures for the first five days of life did not greatly alter the death rate due to sepsis.²⁹

The rise of resistant strains of staphylococci in hospitals has created a dilemma. One finds in the nursery a group of highly susceptible individuals in close approximation to the source of the most resistant organisms. It is little wonder that many hospitals have experienced outbreaks of staphylococcal infection in their nurseries.^{44,45,46} Only a small proportion of mothers and infants infected in the hospital manifest infection prior to discharge. One study demonstrated the median interval from delivery to onset of illness to be 8 days in infants and 14 days in mothers.⁴⁴

The use of prophylactic antibiotics has been proposed and used successfully to control nursery epidemics.⁴⁰ Their use on such occasions is justified. However, unknown hazards may be involved in the widespread prophylactic use of antibiotics in premature infants. It is not generally realized that under current laws a manufacturer is not required to test his product for special toxicity to even newborn animals much less infants! We have only to remember recent experience with oxygen,⁵ Synkavit³⁰ penicillin/Gantrisin,^{®29} and ACTH,⁴⁷ to realize the dangers involved.

NORMAL VALUES

Several recent changes have taken place in opinion about what may be considered normal values for laboratory determinations in the newborn patient.

Cord hemoglobin values were found to range from 12.8 to 19.2 gm/100 ml with a mean of 15.7 plus or minus 1.6 gm/100ml in one series⁴⁸ and in another to range from 13.6 — 19.6 gm/100ml with a mean of 16.5 plus or minus 1.5 gm/100ml.²⁵ The frequently quoted figure of 20 gm/100ml is apparently too high.

A cerebrospinal fluid protein of 80 mg% has usually been regarded as the upper limit of normal but now good evidence has been presented that values of 103 plus or minus 37 mg/100ml are more realistic.⁴⁹ The cerebrospinal fluid protein has also been shown to be quite high in erythroblastotic patients and to vary directly with the level of indirect cerebrospinal fluid bilirubin.⁵⁰

Blood NPN and BUN levels have been found to be greatly influenced by the type of birth⁵¹ and also the concentration of oxygen that the infant has breathed.⁹ Proteinuria can no longer be considered a normal newborn finding.⁵²

Several surveys of neonatal electrolyte values are available.^{53,54,55,56} In any interpretation of those figures one should always pay particular attention to the very wide range of values which are encountered in normal infants. An excellent discussion of the philosophy of interpretation of laboratory determinations in newborn infants has been given by C. A. Smith.⁵⁷

A valuable study of the time of first urine and stool in full term newborn infants⁵⁸ and another of stool frequency⁵⁹ have been published. Similar studies are needed for premature infants.

The congenital dysplasia-predislocation hypothesis of congenital dislocation of the hip has been studied very thoroughly by Caffey et al.⁶⁰ They found that the traditional standard of 30 degrees usually employed as an index of enlarged acetabular angles is erroneous. They recommend that the current practice of diagnosing the predislocation phase of congenital dislocation of the hip be abandoned.

PROGNOSIS

Opinions regarding the mental and physical prognosis for prematurely born children vary a great deal. Much of this variation is due to the failure of past workers to establish adequate control groups. A detailed criticism of previous studies is given by Alm⁶¹ and Douglas and Mogford.⁶²

Most workers agree that premature children are restless, irritable, lacking in concentration power and have a relatively high incidence of mental defect among them. The most recent studies and certainly the best controlled are those of Douglas and Mogford^{62,63} and Douglas.⁶⁴ In a series of reading, vocabulary and intelligence tests done on 407 carefully matched pairs of premature and full term infants done when children were 8 years old the prematures were found to score less than their controls in all tests. Interestingly enough, however, the handicaps were not found increased in the lower birth weight group. In general the handicaps found were small. Certainly these results do not justify the pessi-

mistic attitude of many physicians regarding the outlook for the very small premature infant.

The survival of premature infants can apparently be predicted quite well from the trend of respiratory rates during the first 24 hours of life. Miller's study⁶⁵ of 154 prematures showed that of 102 infants whose respiratory rates did not increase after the first hour there were no deaths but in 52 whose respiratory rates increased after the first hour there was a 25% mortality. This seems to be a simple, logical and valuable aid to the physician in predicting survival of individual newborn infants.

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Pitocin[®] In Obstetrics

With Suggested Uses For Conservation Of Blood In Normal And Complicated Delivery*

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It has been 61 years since Oliver and Schafer¹ reported on Extracts from the Pituitary Body whose virtues they failed to note, in doing their brilliant work on Adrenalin.[®] In 1906 Dale² demonstrated for the first time the oxytocic effect of the Pituitary Gland. In 1909 Blair Bell³ first reported the clinical application of the oxytocic action of the posterior Pituitary Gland in control of postpartum hemorrhage. In 1911 Hofbauer⁴ recommended its use in intranasal cotton pledgets saturated with pituitary extract for better control administration. The method fell into disrepute because variable rates of absorption made it unpredictable and unsafe. The injudicious use of Pituitrin[®] led to its being decried about 1920, and this valuable drug nearly fell into discard. In 1928 Kamm⁵ separated pituitary extract into oxytocic and vasopressor principles. In 1942 Dieckmann⁶ reported the combining of posterior extract with a sulfonic acid to produce Pitsulfonate. When this drug was injected intra-muscularly, it allowed slow liberation of Pituitrin[®], thus minimizing danger of producing tetanic contractions of the uterus. In 1943 Page⁷ gave dilute I.V. solution of Pitocin[®] to "control the character and amplitude of contractions quite adequately."

Needs for better treatment of uterine inertia and a satisfactory method for induction of labor when obstetrical indications dictated, led to further investigations by Reid⁸ and Eastman⁹ who showed that with appropriate safeguards, pituitary extracts in labor could be beneficial with no serious complications. Eastman stated that Pituitrin[®] is a dangerous drug when given before birth of the baby, and its use must follow rigid rules: (1) There must be true inertia, primary in character, labor practically at a standstill, and progress nil. (2) The patient must be in true labor with at least 3-4 cm. dilatation of the cervix. (3) There must be no mechanical obstruction to delivery — X-ray studies must be made to eliminate pelvic contracture or brow

presentation of the fetus. (4) Pituitrin[®] must not be given to the grand multipara (para 6 or over — some say para 4) whose uterus is apt to be thin. (5) Condition of the fetus must be good, on the other hand, a dead fetus is no contraindication. (6) Ether must be given if tetanic contractions last over 3 minutes. (7) Initial dose of Pituitrin[®] should not exceed 1/2 minute with a 30 minute interval between injections. (8) When the above criteria are doubtfully met, do not give Pituitrin[®] for uterine inertia.

The danger from using Pituitrin[®] with nitrous oxide and oxygen anesthesia in producing coronary artery spasm, shock, and death has been reported by Marmer.¹⁰ Ether, spinal and especially cyclopropane anesthesia have also been known to produce profound shock when used with Pituitrin.[®] Pitocin[®] and Ergotrate preparations are safer oxytocics to use because of lack of significant pressor effect. These latter two are always indicated in late toxemia and hypertensive patients. About 1952 du Vigneaud announced the isolation of crystalline pure oxytocic factor without the trace of pressor substance found in Pitocin.[®] Experience with this drug may make it the one of choice for use in late toxemias or pregnant patients with arterial hypertensive disease.

Review of the literature reveals that injudicious use of any oxytocic can cause rupture of the uterus, especially if the patient is a grand multipara. Fatal distress should be looked for at the beginning of a Pitocin[®] infusion (i.e. fetal heart rate falling to 100 per minute or below) and if discovered, the infusion should be temporarily discontinued. Slightly higher incidence of post-partum bleeding, prolapsed cord, and premature separation of the placenta are more commonly associated with use of the Pitocin[®] infusions than without it. Gordon¹¹ indicates that there is tremendous variation in oxytocic effect in different patients — as little as 1/17 minum has been known to produce shock, while some patients tolerate as much as 350 minums of Pitocin.[®] After Labor begins, an infinitesimal amount of Pitocin[®] may produce marked effect on the uterus, while in the same patient a much greater dose would have no demonstrable effect before labor begins. For this reason, the treatment of uterine inertia should be accomplished with half the amount of Pitocin[®] concentration used for the usual induction and begun slowly under the personal

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supervision by the obstetrician with continual supervision by an experienced attendant while the infusion is being given. Ruptured, or artificial rupture of the membranes, when the cervix is favorable, enhances the effect of Pitocin® on the progress of labor, although some obstetricians do not consider it as necessary. Within the past few years, several authorities indicate favoring the use of continuous dilute Pitocin® solutions (Theobald,¹² 1948) over the intermittent intramuscular dosage because of the better control exercised by the former method. Hellman¹³ stated that in the use of continuous I.V. Pitocin® "gradual and physiologic increase in uterine contractions were maintained only so long as the solution continued to run and ceased on cessation of the treatment." Thus tetanic contractions of the uterus and/or fetal distress caused by Pitocin® can be more safely managed by the continuous I.V. drip method of administering it.

Induction of labor by use of Pitocin® has been recommended for various obstetrical conditions by different methods and under variable circumstances. Indications for induction of labor include the following: premature rupture of membranes at term; late toxemia of pregnancy; antepartum fetal death; abruptio placentae; diabetes mellitus; hydramnios; hydatidiform mole; missed abortion; and elective induction.

Variable opinions are held relative to the conditions necessary for successful induction of labor. Stone¹⁴ reports that with adequate dilution concentration (Pitocin® 1 cc. per 1000 cc. of 5% glucose and water), a soft cervix, 50% effacement, 1-2 cm. dilatation and adequate pelvis for the baby, that labor can be successfully induced in 96.9%. Another desirable, favorable condition is engagement, or at least filling of the pelvic inlet by the presenting part of the baby.

That premature labor (28-34 weeks gestation) can be induced as sometimes indicated in late toxemia of pregnancy, with a long thick closed cervix, is reported by Mauzy¹⁵ whereby he administered 5 minims of Pitocin® per 500 cc. of 5% glucose and water I.V. from 10 to 60 drops per minute causing regular contractions of 30 seconds duration for 6-8 hours per day for 2-5 days; (the patient it allowed a night's sleep between successive days) observing the cervix effacement, and rupturing the membranes when conditions are favorable. He induced 18 of 19 patients by this method. Severe fulminating toxemia, however, is usually managed by Cesarean Section because of the time element involved.

Hukill¹⁶ advanced reasons for the elective induction of labor as follows: (1) Personal qualifications of the physician, nursing staff, and patient. (2) The patient leaves home and family in good hands. (3) Admission to hospital is in orderly fashion without embarrassment, pain, or uncertainty. (4) The patient receives a good night's sleep before beginning closely supervised labor. (5) Analgesia is as ideal as possible. (6) Delivery is certain to be attended. (7) Anesthesia is administered on an empty stomach.

A technique for Pitocin® Induction of Labor is suggested as follows: Admit the patient on the evening prior to induction. Give a hynotic for sleep — an enema the next morning; withhold fluids and food p.o.; start the infusion (Pitocin® 1 cc. per 1000 cc. of 5% glucose and water) with initial rate of 4 to 10 drops per minute for the first half hour. Subsequent rate to be determined by the patient's individual requirements. Demerol® 100 mg. may be given prior to start of the infusion for analgesic and synergistic effect, and repeat if necessary. (In consideration of analgesics, it is of interest to note that White¹⁷ described a method of using I.V. Ethyl Alcohol with I.V. Pitocin®, for induction of labor in 250 patients. Since alcohol is sedative, analgesic, hyponotic, and a C.N.S. stimulant, it can be used in all patients except those with toxemia, or liver disease.) The Pitocin® infusion is continued until the presenting part is on the perineum (in normal delivery), then the concentration of Pitocin® is increased to 2 cc. per 1000 cc. of 5% glucose and water and continued as indicated in the next paragraph.

THE ROUTINE USE OF PITOCIN® FOR CONSERVATION OF BLOOD IN NORMAL AND COMPLICATED DELIVERY — METHODS AND MATERIALS

1. For routine low prophylactic (or complicated) forceps delivery with anesthesia: Pitocin® 2cc. added to 1000 cc. of 5% glucose and water solution is prominently labelled and kept in the Delivery Room at all times for immediate use. This saves precious moments that might be needed to prepare it at the time of delivery. When the labor has progressed to a point where the indicated forceps delivery can be accomplished, the patient is anesthetized. When the patient is completely relaxed, the opportune moment occurs to start the Pitocin® infusion by a capable assistant. The solution is allowed to just barely drip 1 to 2 drops per minute, taking extreme care that no sudden flow of the Pitocin® occurs, ever remembering that tetanic contraction of the uterus can develop with small amounts of Pitocin®, but probably will not if the patient is completely relaxed. At the moment the baby is delivered, the Pitocin® infusion is allowed to run at full rate (No. 20 needle at 60-80 drops per minute). The uterus will contract immediately and the placenta can usually be readily delivered by the modified Crede Maneuver with minimal loss of blood. The infusion is allowed to continue at a rate that keeps the fundus firm, and in addition, an attendant holds the uterus up and out of the pelvis, for at least one hour after delivery.

2. For Normal Spontaneous Delivery, where anesthesia has not relaxed the uterus, the same Pitocin® drip infusion is used; however because of the more sensitive, unanesthetized uterus, the rate of flow is begun at a reduced rate of about 20-30 drops per minute at the time the baby's shoulders escape under the symphysis pubis. This prevents the uterus from clamping down on the undelivered placenta. The infusion is increased to

full rate (60-80 drops per minute) after delivery of the placenta, unless the patient shows a tendency to bleed excessively, in which case the Pitocin® infusion is turned on full rate to contract the uterus. If the uterus shows sign of atony at this time extra Pitocin, 0.5 to 2 cc. may be added to the solution. Enough should be added to contract the uterus firmly. If bleeding persists after the uterus contracts firmly, a thorough search should be made for other causes of bleeding.

3. For Cesarean Section: The same concentration of Pitocin® (2 cc. per 1000 cc. of 5% glucose and water, or Pitocin® 1 cc. per 500 cc. blood for transfusion) is used to contract the uterus as soon as the baby is removed.

4. For Incomplete Abortion: When the products of conception are being extruded through the open cervix, Pitocin® in above (Par. 3) concentration added to glucose and water or blood transfusion will effectively control the uterus and conserve blood. If a curettage is to be performed, a continuation of the Pitocin® solution will decrease blood loss and reduce the likelihood of instrument perforation of the uterus.

Results: On 20 August, 1955, Pitocin® 1 cc. was added to 1000 cc. of 5% glucose and water and used routinely at delivery, as noted above. From 20 August, 1955 to 20 November, 1955, two postpartum hemorrhages occurred, each requiring an extra 2 cc. of Pitocin® in blood transfusion and glucose and water I.V. solution, to control the bleeding.

From 20 November, 1955 to 27 November, 1956, Pitocin® 2 cc. was added to 1000 cc. of 5% glucose and water and used routinely at delivery as described in the technique above. Since that time, in 271 vaginal deliveries and 10 Cesarean Sections, there has been no postpartum hemorrhage. (Two additional Cesarean Sections were performed without the Pitocin® routine.) While this is a relatively small series of patients from which to draw conclusive evidence, it is felt that the method described has merit for continued study.

DISCUSSION

Obstetric hemorrhage is the Obstetrician's nightmare and one principal cause of maternal death. Adair¹⁸ quotes the incidence of postpartum hemorrhage (500 cc. or over) as follows: Pastore, New York Lying-in Hospital, 6.4%; Pelham and Kuder, Johns Hopkins Clinic, 6.14%; Chicago Lying-in Hospital, 2.5%.

The above methods of blood loss control are useful in any hospital, but especially so in the smaller institution where trained assistants, in quantity and quality, are often at a minimum. It is reassuring to the physician to

know that the fundus is well contracted when the patient in reacting from anesthesia starts to vomit and the assistant loses grasp of the fundus. In the absence of a person capable of starting an I.V. infusion, the Obstetrician can start it himself, if need be, and scrub for the delivery, thereafter.

The use of the Pitocin® infusion in incomplete abortion helps control excessive bleeding and allows time to prepare for other measures necessary in management of the patient. This is especially helpful in the small hospital where personnel may be limited on weekends, holidays, and in the early hours of the morning.

SUMMARY

1. The History of Pituitary Extracts has been reviewed.

2. Uses and pitfalls of Pitocin® have been discussed.

3. A technique for conservation of blood in obstetrics, by routine use of continuous I.V. Pitocin® has been recorded, tried, and found effective in a concentration of Pitocin® 2cc. per 1000 cc. of 5% glucose and water (Pitocin® 1 cc. 500 cc. of blood) with special emphasis on its value in small hospitals.

The author wishes to express his appreciation to Dr. H. J. Farmer for his assistance and inclusion of his obstetrical cases in the use of Pitocin® at delivery. Also Dr. J. G. Grimes, Anesthesiologist, for his consultation and assistance in implementing the use of Pitocin® in the procedures described.

ADDITIONAL NOTE

Since this paper was presented 63 additional deliveries have been done by Pitocin® technique without obstetrical hemorrhage. 1 April 1957 B.F.C.

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Tinea Capitis In Vermont

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This brief report is presented to record the incidence and to describe the pattern of this disease in this portion of New England. Since Tinea Capitis is not generally a reportable condition, few state health departments have data as to its incidence or as to what organisms the cases are due. This material is based upon cases seen by the author in private practice of Dermatology from 1949 to 1956 and upon data concerning two small epidemics of the disease in the State. In my own material cases have been excluded which had their origin outside this region, although two cases are included from closely contiguous areas of New York. Table 1 shows the information regarding personal cases.

The first known epidemic of Tinea Capitis appeared in the town of Bellows Falls, Vermont, situated in the southeastern part of the state and in the Connecticut River Valley. Actually, the first known cases were discovered in a school in Westminster, Vermont, a few miles south of Bellows Falls. This took place in 1947 and during the same year cases were also found in schools of Bellows Falls. By 1948-49 at least 28 cases were known to the public health nurse of the area.¹ A Wood's Light survey of school children was carried out in 1949 for case finding. This search had included the schools of two other adjacent towns (Rockingham and Saxton's River). In late November 1950, I visited the town at the request of the State Health Commissioner. Nineteen children had been assembled for examination, of whom 16 showed both Wood's Light positive hairs and non-inflammatory patches of Tinea Capitis. Subsequent cultural studies showed all infections to be due to *M. Audouini*. A program of topical therapy with 5% Salicylanilide Ointment carried out at school under supervision of the public health nurse was instituted and a survey of other schools in this part of the state was carried out by Doctor Charles Leach. No other epidemics were found but sporadic cases were discovered. Although the total number of cases is not accurately known in 1950-51 at least 43 cases were positively identified. No facilities were available within the community or close at hand for X-Ray epilation and thus only a very small number ever were so treated. Despite this, in one year the cases under active treatment had fallen to five and since that time only occasional cases have been found, probably not in excess of the average for sporadic cases.

Another epidemic in Vermont was first brought to

light when a local physician called to the attention of the State Department of Health, the existence of a number of cases of Tinea Capitis in the schools of Barre, Vermont.² This community is approximately 100 road miles from Bellows Falls and there is no particular link between the two towns of social or economic nature. This initial report was in October 1953 and at that time, about 50 cases were known to exist. By August of 1954 a total of 170 cases had been found and this represents the peak load. Only twelve of this total lived in nearby towns and attended school outside Barre.

It is interesting to note that during this period, only sporadic cases appeared in Montpelier, a community only seven miles distant and inextricably linked economically and socially with Barre. From the non-inflammatory character of the disease and a few cultures which I made myself from children from Barre during the epidemic, I feel it was due solely to *Microsporum Audouini*. By dint of topical care, supervised by public health nurses, at first by topical application of 5% Salicylanilide and later by application of carbolfuchsin solution, the epidemic gradually abated and during this time only thirteen (13) children were treated by X-Ray epilation. At present four cases are still known to be present in Barre.

DISCUSSION

It seems clear that the large epidemics of Tinea Capitis observed in the major cities of this country about ten years ago have spread centrifugally to lesser centers of population. By far the great majority of Tinea Capitis in Vermont is due to *M. Audouini*. At least two epidemics have taken place in the past nine years and there have been numerous sporadic cases.

The laity are prone to regard Tinea Capitis as a highly contagious disease and the occurrence of a case is a cause for considerable alarm on the part of the parents and often of the family physician. Surely the fact that many families with numerous children have only one child infected speaks against any high degree of contagion. Similarly the relatively small number of cases in a school system which is involved in a so-called epidemic is still further indication of the rather low order of contagiousness of the disease.

Parents, teachers and family physicians are likely to view the case of Tinea Capitis with more alarm than it

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1. Mrs. A. Damon, R.N., through whose help much data was obtained.

2. Data kindly supplied by Doctor Maynard Mires, Epidemiologist, Vermont Health Department and Mrs. Fish, R.N.

TABLE I

NO.	AGE	SEX	DURATION ¹	ORGANISM ²	X-RAY EPILATION?	EPIDEMIC?
1	2	M	1/4	U	0	0
2	3	F	24	A	Yes	0
3	3	M	1	A	0	0
4	3	F	8	A	Yes	0
5	4	M	3/4	A	0	Yes
6	5	F	4	A	Yes	0
7	5	M	1	C	0	0
8	6	M	1	A	Yes	0
9	6	M	1	C	0	0
10	6	F	24	A	0	0
11	8	M	3	A	Yes	0
12	9	M	3	A	Yes	0
13	9	M	1	A	0	Yes
14	9	M	3	A	0	0
15	9	F	30	A	0	0
16	10	F	3/4	A	Yes	0

1. Duration = from Onset to Diagnosis

2. Organism: U = Undetermined; C = M. Canis; A = M. Audouini

deserves. Symptoms on the part of the patient are minimal and aside from the alopecia produced there is no damage to the child. Were it not for the problem of spread of the disease, it would hardly be worth treating.

Whether or not our treatment really does overcome the disease seems to be open to considerable question. In the two epidemics reported the case incidence fell steadily from the peak period with only topical therapy and without the appearance of kerion or other inflammatory changes. The proportion of cases treated by epilation with X-Ray was very small indeed. It is well understood that this method is safe, efficient and prompt as a means of cure when used by a properly qualified and experienced physician but in a rural region not many children will have this method of treatment available.

Exclusion from school of children infected with ring-

worm of the scalp is not required in Vermont and it would seem that this is a wholly unnecessary measure in view of the prompt control of the epidemics while infected children remain in school.

CONCLUSIONS

(1) Tinea Capitis is not a particularly serious disease in terms of symptoms, disability or danger of contagion.

(2) Even in so-called epidemic form the incidence of cases eventually tends to fall without mass use of X-Ray epilation.

(3) It apparently is quite unnecessary to assume that an acute inflammatory episode is required to initiate healing in *Microsporum Audouini* Tinea Capitis.

(4) The vigour of our attack on Tinea Capitis should be tempered by calm consideration of presently known facts about the disease.

Antibiotic Resistance In Staphylococci

DAVID E. DONIGER, A.B., M.S. AND SR. CORONA M. PARENTEAU, M.T. (ASCP)*

The changing sensitivity of staphylococci to the antibiotics in common use is a phenomenon only too well appreciated at the present time.^{6,7,8} The dissimilarity between the sensitivities of intra- and extra-hospital populations of staphylococci has been noted as well and is beginning to be investigated.^{1,3,4} It is the purpose of this survey to provide a preliminary and overall view of staphylococcal infections as they have presented themselves at this hospital. The months of February, June and October of the years 1954 through 1956 were arbitrarily selected and all the staphylococcal infections whose organisms were examined for sensitivity were recorded. A total of 550 cultures and sensitivity testings from 464 patients were encountered; of these, 269 were pure cultures of staphylococci.

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METHODS

Sensitivities to each of 8 antibiotics tested in all months reviewed were scored according to the following system:

- very sensitive 6 points
- moderately sensitive 4 points
- slightly sensitive 2 points
- insensitive or totally resistant . . 0 points

In this manner, a "score" for each antibiotic was obtained; when this figure was divided by the total of the "scores" of all 8 antibiotics for the same month, there was obtained an "adjusted score" which may be compared with similarly derived figures from other periods of time or other classifications.

RESULTS

Tables I and II represent, respectively, "adjusted scores" of 8 antibiotics tested in all the purely staphylococcal infections and in the total of pure and mixed staphylococcal infections.

TABLE I. Pure cultures.

Antibiotic	1954			1955			1956		
	Feb.	June	Oct.	Feb.	June	Oct.	Feb.	June	Oct.
Aureomycin®	15.8	12.9	11.5	19.9	13.3	9.7	12.0	10.6	14.4
Erythromycin	19.2	18.8	17.9	6.4	18.2	29.2	25.7	27.0	20.1
Terramycin®	12.7	11.8	14.1	15.7	12.7	10.9	12.0	10.0	12.6
Streptomycin	10.6	8.4	12.3	14.7	12.3	7.3	11.6	13.2	10.8
Penicillin	6.5	1.8	0	17.4	10.0	4.8	7.0	9.1	11.7
Chloromycetin®	12.2	17.3	20.9	25.0	22.4	35.3	24.4	21.2	26.2
Neomycin	20.3	21.4	23.0	0.8	0.3	0	0.8	1.5	0.6
Gantrisin®	2.3	7.5	0	1.2	10.2	2.4	6.4	6.9	3.1

TABLE II. Total cultures.

Antibiotic	1954			1955			1956		
	Feb.	June	Oct.	Feb.	June	Oct.	Feb.	June	Oct.
Aureomycin®	16.7	15.0	20.0	19.2	14.3	15.4	13.3	12.9	14.4
Erythromycin	18.0	15.5	15.2	7.9	18.2	18.0	25.4	23.8	19.4
Terramycin®	14.3	15.7	18.8	16.8	13.5	15.4	13.3	13.1	13.0
Streptomycin	10.2	8.8	10.7	10.9	12.1	12.0	9.6	12.0	13.0
Penicillin	6.5	2.2	0	13.5	8.6	8.6	8.6	9.5	10.1
Chloromycetin®	12.8	20.0	20.0	30.0	22.0	25.0	22.7	21.9	26.6
Neomycin	16.3	17.8	14.5	0.3	0.6	0	0.4	1.4	0.3
Gantrisin®	4.9	4.6	0.5	1.1	10.3	4.8	6.1	5.8	2.2

Erythromycin — — — Aureomycin — — — Penicillin —————
Chloromycetin ————— Terramycin ————— Neomycin — — —
Streptomycin..... Gantrisin.....

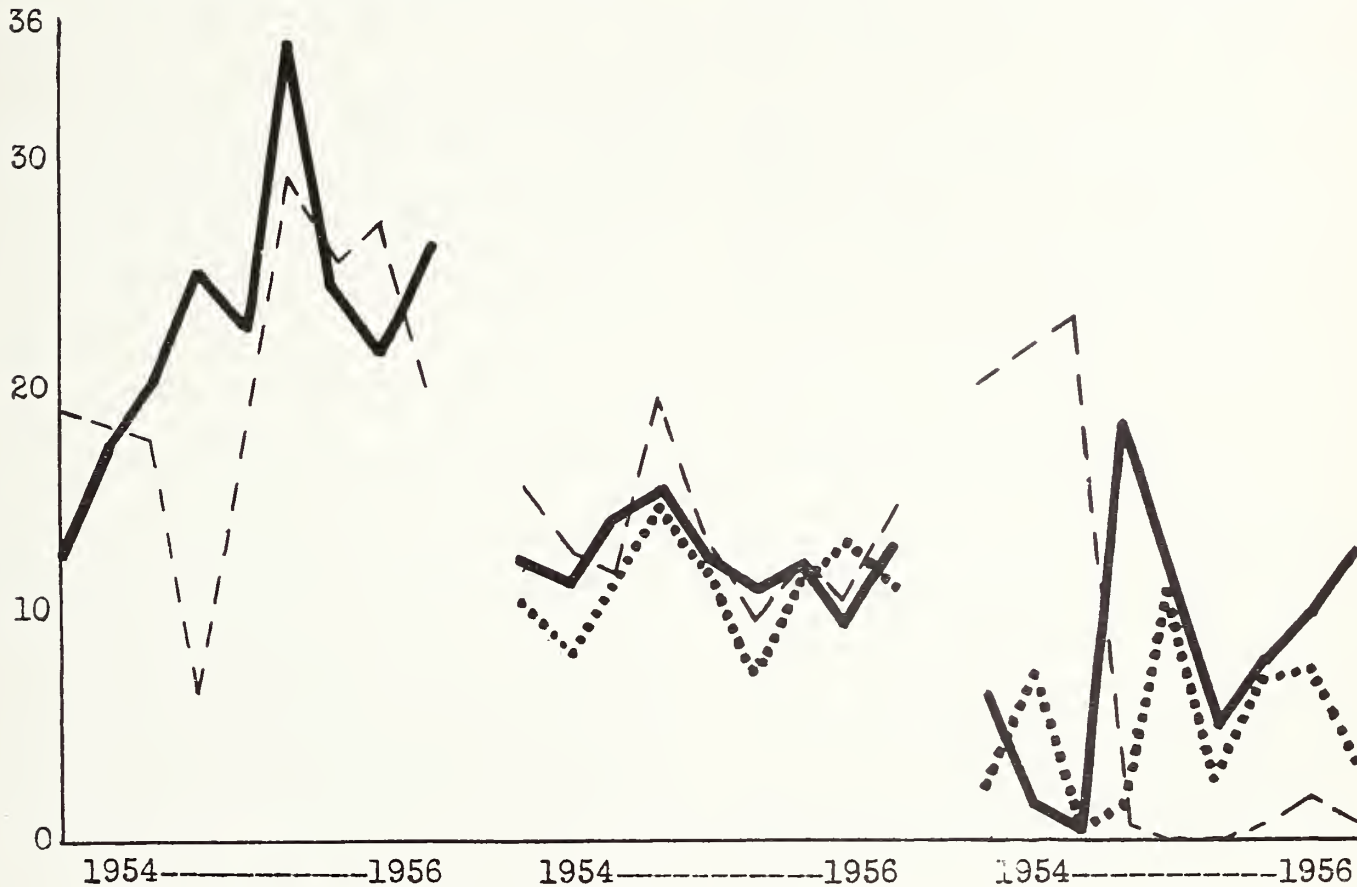


Fig. 1.

Fig. 2.

Fig. 3.

While the above numbers are entirely arbitrary and are of no significance in themselves, they do serve to indicate two sets of relationships: First, they provide an "index of effectiveness" by means of which the efficacy of these 8 antibiotics in combatting staphylococci isolated from pure and mixed infections can be contrasted, one against another. Second, the trends in changing sensitivities of staphylococci from any desired group of sources may be followed. It is primarily with this latter purpose in view that the present study was undertaken.

Figures 1, 2 and 3 have been assembled from Table I (Pure Cultures). Two types of results may be inferred from these figures:

A. SCORE. The 8 antibiotics tend to group themselves according to whether they show consistently high, moderate or low scores. It may be noted that Erythromycin and Chloromycetin® have been rather consistently the highest-scoring drugs while Aureomycin®, Terramycin® and Streptomycin are closely packed in the range of moderate effectiveness. Penicillin, Neomycin and Gantrisin® have had relatively lowest scores, al-

though Neomycin was one of the most effective drugs tested throughout 1954.

B. TREND. Over the three-year period examined, Penicillin, Chloromycetin® and Erythromycin showed increasing effectiveness while Aureomycin®, Terramycin®, Streptomycin and Gantrisin® showed little or no change and Neomycin showed decreasing scores.

DISCUSSION

A major consideration presents itself immediately in the evaluation of the data and conclusions presented here; it is that one here deals with *in vitro* testing of antibiotic effectiveness (or staphylococcal sensitivity, whichever aspect is preferred) and *not* with the clinical response to therapy of an infection in a patient. This means that, in addition to all the many factors, including the state of the patient's physiologic defences, which affect the outcome of antibiotic therapy, one must take into account that these sensitivities were tested by the standard procedure of placing impregnated (with antibiotic) discs of paper on cultures of the organisms and noting sizes of zones of inhibition of growth among these discs. It is well known that the solubilities and/or

rates of diffusion of antibiotics in the common culture media may differ markedly from one another.

If this consideration is kept in mind, such data as are treated in this study become useful adjuncts to clinical experience. It may be concluded from the figures presented that staphylococci are in a state of continuous change as regards their sensitivity to antibiotics and that this change involves not only the development of resistance but the loss of it.

It is by providing the clinician with trends of sensitivity of an organism that such studies as the present one may prove most useful. To the best of our knowledge, there have been, up to the present time, only a single undocumented reference² to the phenomenon of increasing sensitivity of staphylococcal populations to

antibiotics in common use and one study⁵ in which this phenomenon was an incidental finding.

A continuation of this study is planned in which the material presented here will be further examined in an attempt to relate to the present findings such factors as intra- versus extra-hospital acquisition of infection and anatomic source of the cultured organisms.

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Medical Conference*

University Of Vermont College Of Medicine

Presentation by the Neurological Service — Meningitis

Dr. Fitzgerald: This is the first Mary Fletcher Hospital admission of a 59-year-old white married male woodcutter.

Chief Complaint: "Ear inflammation" of three weeks' duration.

Present Illness: Patient admits to a long history of chronic inflammation and draining of the ears, with moderate deafness, for 37 years. Three weeks prior to admission the patient developed a severe headache radiating into the neck. The pain was more severe on the right than the left. During the initial few days of the present illness the patient experienced a severe sawing noise heard in the right ear. This persisted for three days. He was anorexic and vomited a number of times. He noted severe vertigo and was unable to walk without assistance. He said he had the feeling that the ear "broke," but there was no external drainage. He was treated as an outpatient with an unknown antibiotic.

Two weeks prior to admission here he was admitted to another hospital and found to have fever, stiff neck, decreased deep tendon reflexes in the right lower extremity, and a Babinski reflex on the right. A lumbar puncture was done which showed an initial pressure of 270 mm. H₂O, WBC 5,330/cmm., polys 88%, lymphs 12%, glucose 26 mg.%, total protein 210 mg.%. He was placed on procaine penicillin 400,000 units and dihydrostreptomycin 0.5 gm., twice daily, and intravenous sulfadiazine 5.0 gm. This latter was changed to sulfadiazine 1 gm., q.4h., by mouth. One week after admission Mysteclin® 250 mg. q.4h was started and two days later Parenzyme 0.5 c.c., i.m., twice daily. Several lumbar punctures were done, the last on the tenth hospital day. This showed an initial pressure of 120 mm. H₂O, WBC 1214/cmm., polys 65%, lymphs 35%. No organisms were seen on cultures from any of the spinal fluid specimens. The patient was transferred to this hospital for further observation.

Remainder of history noncontributory.

Physical Examination: Temperature 37.5° C, pulse 80, respiration 22, blood pressure 120/80. A middle-aged white male who is severely deaf but in no apparent distress. Severe dental caries were noted and fine macular erythematous rash on his back and legs.

Neurological Examination: The patient is alert, cooperative and oriented in all spheres. Memory for recent events is somewhat hazy. The patient is unsteady with eyes closed. Gait is also somewhat unsteady. There is minimal nystagmus on right and left lateral gaze bilaterally. Hearing is grossly impaired bilaterally, more marked on the right. There is minimal increased resistance to passive stretch on forward bending of the neck, but no definite rigidity. General muscle power and resistance to passive stretch average and equal throughout. Coordinative functions are intact. Deep tendon reflexes are somewhat hypoactive but symmetrical throughout. There is a suggestive extensor toe response on the right. Superficial and deep sensory modalities are intact throughout.

Laboratory: Blood: hemoglobin 13.3 gms. RBC 4.4 million, WBC 19,550, polys, 64, stabs 8, lymphocytes 23, monocytes 5, eosinophiles 0. Sedimentation rate 20. Urinalysis: specific gravity 1.016, protein trace, WBC 25 to 35, RBC 2 to 4. VDRL negative. Cerebrospinal fluid: initial pressure 170 mm. H₂O, WBC 88, polys 90%, lymphocytes 10%, Pandy positive, protein 87 mg.%. Colloidal gold 1123331000. Culture negative. Culture from right ear shows hemolytic staphylococcus albus sensitive to Furacin.®

Hospital Course: The patient remained essentially afebrile in the hospital and was given no specific therapy. He had no complaints except for a dull headache in the right temporal region which gradually subsided. Two subsequent spinal taps were done showing a normal Tobey-Ayer tests. The last spinal fluid showed an initial pressure of 140 mm. H₂O, cells 0, Pandy positive, protein 124 mg.%, Sugar 50 mg.%. Cultures of all specimens were negative.

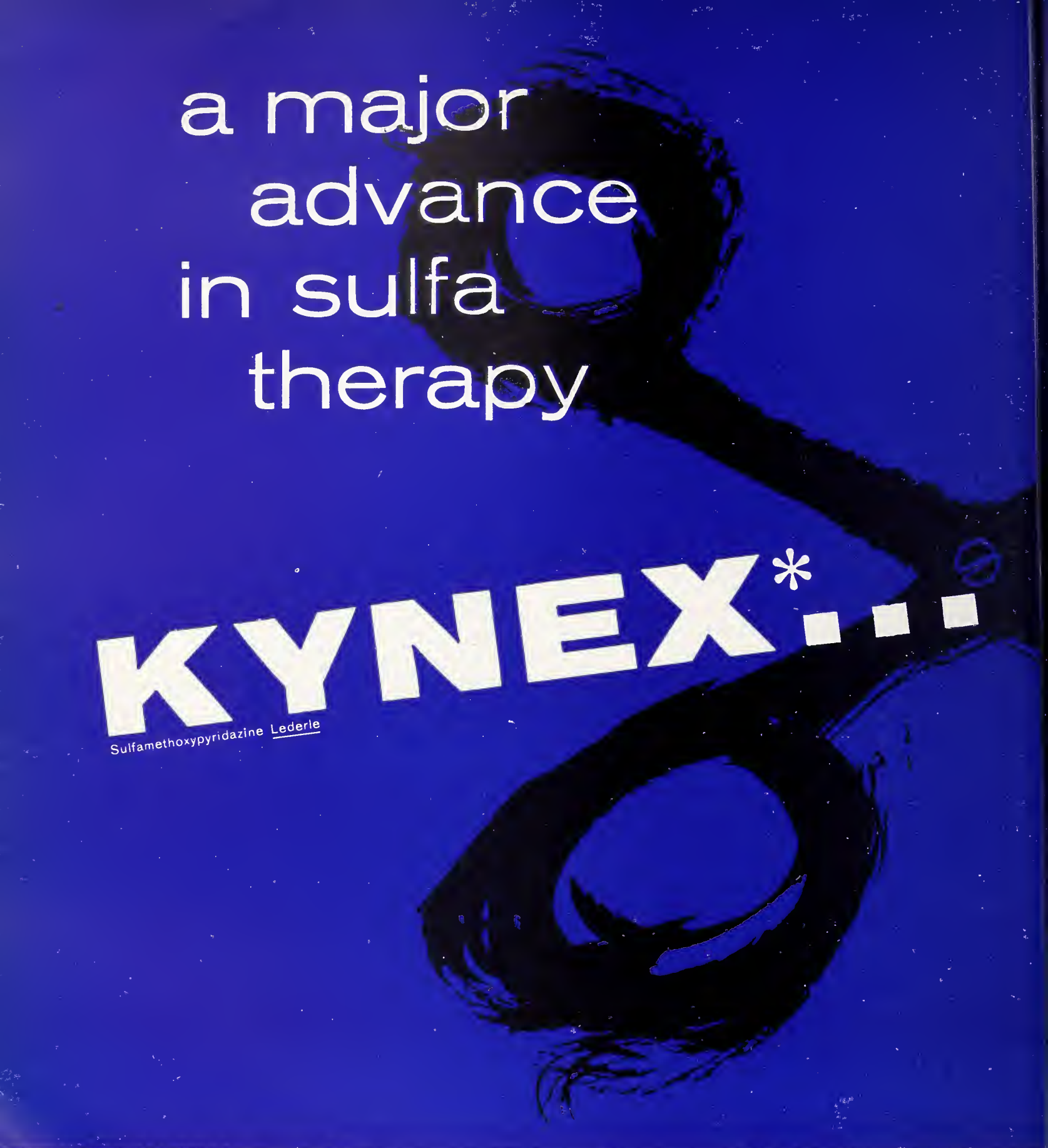
Dr. Schumacher: (Presentation of patient.) Before discussing the various aspects involved in the management of the patient, Dr. Higgins will present the second patient for comparison.

Dr. Higgins: This is the first MFH admission of a 37-year-old white female.

Chief Complaint: Double vision, deafness and an unsteady gait.

Present Illness: On February 16, 1956, the patient developed pain in her left ear which was followed by a purulent discharge. This promptly cleared without treatment. On February 20, she developed a stiff neck, double vision and tinnitus. A fever of 104° to 105° F accompanied the illness. Therefore penicillin and erythromycin were started. Because of continued fever, she was admitted to a hospital on February 23. On

*Medical Conference at the Mary Fletcher Hospital, March 27, 1956.



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SAFETY: KYNEX offers a margin of clinical safety based on low required dosage, solubility, slow excretion rate. Although KYNEX Sulfamethoxypyridazine is a sulfonamide derivative and the usual precautions regarding such drugs should be observed, the low daily dose of 1.0 Gm. is all that is required for the therapeutic blood levels. No increase in dosage is recommended.

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admission to the hospital, she had a temperature of 103°. CBC at that time revealed 26,100 WBC of which 89% were polys, 3% monos and 8% lymphocytes. The urinalysis was essentially negative with a specific gravity of 1.003. Spinal tap revealed slightly turbid spinal fluid, initial pressure of 180 mm. H₂O, 321 WBC, 75% polys, and 61 RBC, Pandy trace, sugar 48 mg.%, total protein 85 mg.%. Smears and cultures were done and the organism found to be *Hemophilus influenzae*. Serial blood cultures were negative. The patient was seen by an ENT consultant who felt her drums were slightly injected, not bulging, and showed no evidence of localized infection at that time. Neurologic examination was negative.

Initial antibiotic therapy was penicillin 1 million units, i.m., b.i.d., and erythromycin 200 mg., i.m., b.i.d., and 250 mg., orally, q.i.d. The day following her admission she was also started on streptomycin, 1 gm., i.m., b.i.d. On the 25th of February when cultures revealed *Hemophilus influenzae*, penicillin and erythromycin were stopped and the patient was placed on Chloromycetin® 250 m.g., q.i.d., p.o. and 1 gm., i.m., b.i.d. Chloromycetin® was continued from February 25 to March 8 and then was stopped. Penicillin which had been started on the 21st of February was continued through March 7 and was then stopped.

The patient's temperature continued to spike practically daily to 103° F until approximately February 28, when it gradually decreased with rises up to approximately 100°F through March 3, and from then on was normal. The patient seemed to improve rapidly. On March 2, a repeat WBC was 11, 150 with 86% polys, 1% monos and 13% lymphocytes. On March 8, a repeat spinal tap showed initial pressure of 240 mm. H₂O, clear fluid with 7 WBC, all of which were lymphocytes. Pandy was negative and protein was 40 mg.%. Cultures of that spinal fluid remained negative. On March 8 all antibiotics were stopped and she was allowed up and about. However, she seemed at that time to walk with a great deal of difficulty and with a relatively wide base. She seemed to have some slight change in personality. ENT consultant again found no localized process in the left ear. He found no cause for diplopia. On March 13 a repeat WBC revealed 17,700 with 87% polys. Neurological consultation on March 20 revealed bilateral VIth nerve involvement. Spinal tap done on that date again revealed an increased pressure.

Past History: Recurrent ear trouble until the age of 16. Two years ago she had a six week's episode of visual difficulty which was characterized by a spot before her left eye which changed colors.

Family History: Mother died at age 54 from a spinal tumor. Brother, age 54, has carcinoma of the intestine.

Physical Examination: TRR normal. The left tympanic membrane was minimally injected. Neurological examination revealed an unsteady, wide based gait. Gross peripheral fields were normal but there was a

large central scotoma on the left. The acuity was diminished in the left eye. Examination of the fundi revealed absence of the physiological cups with engorged vessels. A bilateral lateral rectus weakness was noted. There was decreased auditory acuity bilaterally more marked on the right and questionable right lower facial weakness. The reflexes were generally hyperactive but equal bilaterally. ENT consultation revealed retracted tympanic membranes with perceptive hearing loss, severe on the right and moderate on the left.

Laboratory: Hgb 12.3 gm., RBC 3.9 million, WBC 8750, polys 82%, bands 2%, lymphs 13%, monos 3%, S.R. 27mm/hr. Urinalysis: specific gravity 1.017, albumin 0, sugar 0. Spinal tap: Initial pressure 210 mm. Jugular compression on the right produced a slow 40 mm. rise in 10 seconds with a slow fall. On the left there was a 70 mm. rise with again a slow fall. The CSF content showed protein 33 mgm%, glucose 47 mgm%, RBC 50, WBC 0, and culture negative.

EEG: An abnormal record with no focal features, suggestive more of an underlying seizure disorder than of meningitis or any complication of meningitis.

X-Ray Studies: The left mastoid shows slight clouding as compared with the right. Paranasal sinuses and skull normal.

Hospital Course: The patient remained afebrile and her sense of well-being improved. Diplopia decreased somewhat. No specific therapy was given.

Dr. Martin: Presentation of patient.

Dr. Schumacher: Dr. Morrow, will you state the present attitudes prevailing in the field of otolaryngology about the place of local surgery in eradicating foci of infection which have been complicated by meningitis?

Dr. Morrow: Concerning the first case I will only point out that the patient still has an active chronic suppurative infection in the ear and mastoid, and that it is important to clear this up. Dr. Reed's consultation note recommends radical mastoid surgery. Failure to control this infection only invites further episodes of dangerous intracranial complications.

Before commenting on the second case I would like to make a general comment on the subject of otitic meningitis. About twelve years ago a wave of optimism swept over the profession concerning the possibilities of non-surgical management of these cases, especially the ones of pneumococcal origin. The use of penicillin together with sulfonamides had suddenly dropped the mortality of pneumococcus meningitis from 95% to about 30%. Now there is a new surge of interest in the possibility of chipping down this 30% further by doing mastoidectomies on some of these patients.

We have lately been reviewing both the literature and our own experience with an eye to formulating clearer indications for mastoidectomy in general. As regards otitic pneumococcus meningitis a good review of the subject is to be found in a paper by two Danish

authors, (Bostrup-Madsen and Norby) published in 1955. These men traced the earlier non-surgical policy through the beginnings of the new recognition of the need for mastoidectomy in some cases. The policy applied to the thirty cases they reported was to treat initially with large doses of penicillin and sulfonamides; then if any case failed to show decided improvement within two or three days, mastoidectomy was done on the ear showing any inflammatory changes. If both ears were involved, or if neither showed distinct features of inflammation, they operated on both sides. These authors were most enthusiastic about their results and even implied that a policy of early operation on all otitic meningitis cases might be a good one. They base this suggestion on the argument that the primary focus in many cases is in an osteitis inaccessible to penicillin. We fully recognized such a situation in our non-meningitis cases of "masked mastoiditis." They demonstrated such foci of osteitis in operated or autopsied patients. The therapeutic response to surgery in their hands was prompt and gratifying.

We have not adopted the suggested policy of the Danish authors, but we do agree that surgery should be kept in mind in these cases and its value recognized as a means of therapy when the progress is not prompt and fully satisfactory. Early operation may have little or no value in cases in which the onset of otitis and meningitis are concomitant. On the other hand, masked mastoiditis is to be suspected when an ear infection seems to respond to antibiotics, only to be followed in a week or more by meningitis, with or without recurrence of otorrhea. In my present opinion, three groups of meningitis cases call for consideration of mastoid surgery:

1. Those with delayed onset in the course of acute otitis media.
2. Those with early onset but resistant to antibiotic therapy.
3. Those coming on in the course of chronic otitis media.

The clinical history of the second case draws into its differential diagnosis the consideration of Gradenigo's syndrome. This is a situation in which the spread of infection through the petrous apex leads to edema or suppuration at a point where pressure is made on the abducens nerve, and sometimes on the trigeminal, acoustic, facial and trochlear nerves as well. There is a suggestion of this picture on the right side on our patient. Against it, however, is the lack of otorrhea on this side, the lack of x-ray changes and the lack of facial pain. The sixth, seventh, and eighth nerves, however, are involved. The hearing loss is profound and is of a perceptive or nerve type. It is too profound to be of a local middle ear origin alone unless there were a severe labyrinthitis which is not the case. I suspect that these changes around the right petrous apex are the result of the meningitis rather than the pathway of its cause.

The left ear, on the other hand, offers a good possibility as an initial focus and, in view of the clouding in x-ray, may be worthy of surgical exploration. Against this is its clinical appearance of having cleared up on the antibiotics. The indication for surgery will rest heavily on the degree of suspicion Dr. Martin finds for a left lateral sinus thrombosis.

Dr. Schumacher: Dr. Collins, will you review the current concepts regarding the indicated antibiotic therapy and chemotherapy for the various types of meningeal infection?

Dr. Collins: The optimum therapy for the various organisms causing meningitis is not yet entirely agreed upon in many cases, either in regard to the proper antibiotic to be used or the dosage. In presenting these slides, I have had to make a choice in some instances, since experience on the adult Neurological Service here is not large enough to allow us to formulate a final opinion of our own. The choice of a therapeutic regimen depends to some extent upon the experience of the various groups.

The sulfa group, usually sulfadiazine, is the antibiotic of choice in the therapy of meningitis due to *meningococcus*. In the average case, the duration of therapy may need to be only 48 hours, but this will depend upon the response in the individual patient and is frequently extended beyond this time. Penicillin may also be used, but should be used in addition to sulfadiazine.

In those cases due to the *pneumococcus*, penicillin and sulfadiazine should be used. Therapy should be continued until one week after the temperature and cerebrospinal fluid have returned to normal. The *pneumococcus* is apt to be a particularly difficult organism to treat and the slightest evidence of recurrence should be treated vigorously.

Chloromycetin® is the agent of choice for *H. influenzae* meningitis. Some have expressed a preference for Aureomycin® because of the possibility of agranulocytosis or aplastic anemia with Chloromycetin®. Therapy should continue for five to seven days at the end of which time it may be stopped if the cerebrospinal fluid glucose is normal and the culture negative.

The *staphylococcus* should be treated with penicillin and sulfadiazine. Sensitivity studies, however, should probably be run and therapy modified accordingly. Treatment should persist for several weeks after clinical evidence of infection subsides.

Those cases due to *streptococcus* are best treated with penicillin and streptomycin. Therapy should continue for one week after clinical evidence of infection has disappeared.

Recommended therapy for *coliform* meningitis should consist of Aureomycin® or Chloromycetin® plus sulfadiazine and streptomycin. The optimum therapeutic agent, however, will need to be determined by sensitivity studies.

And lastly, we must consider the therapy of meningitis cases in which *no organism* can be demonstrated. In these cases the use of penicillin, Chloromycetin® and sulfadiazine has been recommended since it is felt that this combination will be sufficient to treat most of the common organisms. As a routine treatment for meningitis, however, the practice is to be deplored. It should only be resorted to in those cases in which the organism cannot be established. On the basis of other clinical evidence, the probable organism can in some cases be postulated and this, plus the clinical course of the patient, will determine the duration of therapy.

Dr. McKay: While I would agree that Chloromycetin® is the single agent of choice, I would not agree that Aureomycin® should in any way be considered an alternate mode of therapy or even a close second in the treatment of *H. influenzae* meningitis. I feel that streptomycin is a more effective agent than Aureomycin® in these cases. In the treatment of meningitis due to staphylococcus, I would feel that either Chloromycetin® or erythromycin ought to be used. Most of the staphylococci that we are seeing are resistant to penicillin.

MATERIAL NOT PRESENTED AT CONFERENCE

Alexander in 1952 stated that Chloromycetin® and sulfadiazine were the agents of choice in the treatment of *H. influenzae* meningitis. Ross expressed a similar opinion in the same year, as did Hanberry in 1954. Ross questioned whether the addition of sulfadiazine was beneficial. On the other hand, Sahs in 1954 expressed the feeling that he would prefer to limit the use of Chloromycetin® to salmonella infections only. Smith states that Chloromycetin® is the drug of choice but that Aureomycin® and Terramycin® are without doubt both effective. It is stated (*J. Pediatrics* 48:18, 1955) that Chloromycetin® can produce damage and is no better than Terramycin®. In 1947 Finland stated that streptomycin was the most effective single agent in the therapy of meningitis due to gram negative bacilli including *H. influenzae*. Smythe recommended the treatment of all *H. influenzae* infections with streptomycin and sulfadiazine. Alexander, however, in 1946 cautioned that streptomycin was adequate only for the mild cases and inadequate for the severe *H. influenzae* infections. Hodes in 1949, using antiserum and streptomycin in varying combinations in the therapy of *H. influenzae* meningitis, concluded that the addition of streptomycin did not appreciably alter the survival rate or morbidity in his cases. Schoenbach in 1952 stated that Aureomycin® and Chloromycetin® were as satisfactory as, or even superior to streptomycin in the treatment of this problem. He did, however, state that he felt that Chloromycetin® was superior to Aureomycin®. A compilation of cases from the literature follows:

Of those treated with streptomycin, 186 cases were found with 19 deaths and 11 with sequelae. This represents a mortality rate of 10.2% and a morbidity rate of 6%. 40 of these cases were treated with strepto-

mycin alone, and of these there were 8 deaths and 2 with sequelae representing 20% mortality and 5% morbidity. The remaining cases were treated in conjunction with sulfadiazine or with sulfa and penicillin. 46 cases treated with Chloromycetin® were found, in which there were 3 deaths and 3 with sequelae representing a 6.5% mortality and morbidity rate. 31 of these cases were treated with Chloromycetin® alone, with one death and 2 sequelae. However, 12 of these were treated with Chloromycetin Palmitate. This practice has since been condemned. This then leaves 19 cases treated with Chloromycetin® alone in which there were no deaths and no sequelae. However, 15 cases treated with Chloromycetin® and sulfadiazine resulted in 2 deaths and 1 with sequelae. Thirty cases were treated with Aureomycin®. There were no deaths in this group and 3 patients with sequelae. Fourteen were treated with Aureomycin® alone, with no deaths and 1 with sequelae.

Experimental studies have shown that in vitro, Aureomycin® is an effective antibiotic against *H. influenzae*. The effective concentration for inhibition of growth for Aureomycin® is 0.625 mcg./cc; for streptomycin, 1.25 mcg./cc. (Chandler and Hodes). Schoenbach reports 0.39 mcg./cc. for Aureomycin®, 0.625 mcg./cc. for Chloromycetin®, and 1.56 mcg./cc. for streptomycin. It has further been reported that the minimal effective dose on streptomycin resistant strains for Chloromycetin® is 1 mcg./cc. and for Aureomycin® 0.5 mcg./cc. On the other hand, one report giving the per cent of viable cells following a 10 mcg. concentration of Chloromycetin® and Aureomycin® reports a 0% survival with Chloromycetin® and a 0.96% survival with Aureomycin®. However, clinical and in vivo studies give a different picture.

Briar in 1948 reported that an oral dose of 500 mg. of Aureomycin® twice daily would give a serum concentration of 0.6 to 2.4 mcg./cc. Warner in 1950 found that an oral dose of Aureomycin® of 50 mg./kilo would give a serum concentration of 3.3 to 12.5 mcg./cc. The cerebrospinal fluid levels were higher with Chloromycetin® than with Aureomycin®. Roy reporting in 1952 stated that a cerebrospinal fluid level of 5 mcg./cc. was required with Chloromycetin® and that an oral dose of 50 mg./kilo for 24 hours divided into three doses would produce this level. Whereas Chandler and Hodes determining cerebrospinal fluid levels in four of five successfully treated cases with Aureomycin® could only find a level of 0 to 0.4 mcg./cc.

It can be seen from the above that while Aureomycin® is an extremely effective agent in inhibiting *H. influenzae*, the problem clinically is one of getting an adequate dosage into the central nervous system. This probably accounts for the fact that even in successfully treated cases with Aureomycin®, there has usually been a delay in the sterilization of the spinal fluid.

It would appear from the literature that the complications arising as a result of Chloromycetin® therapy have

been relatively few. I found 10 cases reported and Hargraves reported 8 cases in 1952 of aplastic anemia. Not all of the 10 cases reported were aplastic anemias, some being granulocytopenias and others reporting purpura. Most of the cases were treated with very large doses, either intermittently or continuously over a long period of time. However, a nonfatal granulocytopenia was reported in a four-month-old child after receiving only a total dose of 1.75 gms. A fatal case in a 71-year-old man is reported after a total dose of only 24 gms., but this was given intermittently over a nine-month period. Wintrobe expressed the opinion in 1952 that complications were rare and that the drug should be used where indicated. Most of the complications disappear on withdrawal of the drug.

Generalizations are probably not justified on the basis of this brief and incomplete analysis of the problem. Undoubtedly the age of the patient, duration of infection prior to therapy, and the precise therapeutic regimen should be considered in the final analysis of the results of therapy. The series of cases treated with Aureomycin® is small, as is that of the cases treated with Chloromycetin®. It would appear, however, that the toxicity of Chloromycetin® is probably not a valid contraindication to its use, though some feel that it is. In vitro and in vivo studies would appear to offer objections to the use of Aureomycin®, but the results in the

cases reported would appear to be quite satisfactory and the opinion of others plus the results reported would suggest that it is more effective than streptomycin. Chloromycetin® is reasonably well-established as the agent of choice. However, one gets the impression that Aureomycin® has not been adequately evaluated, either from the standpoint of number of cases or from the standpoint of adequate dosage. It is possible that higher dosages or a parenteral route of administration would produce the desired cerebrospinal fluid level.

Difference of opinion has also arisen concerning the management of staphylococcal meningitis. Alexander in 1953 recommended the use of penicillin, 12 million units, intravenously for 24 hours followed by 1 million units intramuscularly every 12 hours for a total of 10 days. However, Harrell and Martin in the same year reported that 60% of staphylococci were resistant to penicillin by 1948 and that 36% were resistant to Aureomycin® and Terramycin® by 1951. In 1955 DeVries, on the basis of cultures taken at autopsy, reported that 52% of staphylococci were sensitive to Chloromycetin® only; that 30% were sensitive to all except penicillin; that 18% were sensitive to all common antibiotics. It would appear then that the agent of choice in the treatment of this organism is probably Chloromycetin®.

Coming Meetings

American Medical Association
Annual Meeting — June 3-7, 1957
New York City

Woman's Auxiliary to the
American Medical Association
June 3-7, 1957 — New York City

The Journal of the Maine Medical Association

DANIEL F. HANLEY, M.D., Brunswick, Editor

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Guest Editorial

Needs Of Man Dictate Changes In Society — Who Shall Lead

LEON R. LEZER, M.D., M.P.H.*

From the beginning of time conditions of men have dictated action to preserve the best, improve the poorest and discard the worst in the environment. In all spheres of man's interest, education, law, theology, industry and medicine — has this been true. Unlike law, other fields of man's interest must be written for guidance either ahead of or in step with changing times. Child labor laws were not written until public opinion established the "wrong" in utilizing child labor.

PUBLIC DEMAND AND MEDICAL INFLUENCE

The history of medicine reveals the tragic fact that the ill and insane were segregated primarily in the interests of protection of the public — not in the primary interests of the patient. Little blame can be registered for the early existence of "pest houses." Scientific advance in the practice of medicine has changed the "pest house" into a highly qualified institution for the early diagnosis and prompt treatment of the ill. General hospitals are demanded by the public rather than considered to be the last resort in diagnosis and treatment. Mental

hospitals are not the dreaded institutions of fifty years ago. The point in our historical reference is that what the public demands; the public gets.

As population characteristics change, public opinion and demands change. Fear of death no longer haunts the pregnant woman. The mother is reasonably sure that her newborn will live to maturity. Death by violence lurks in the wind today — accidents, civil disaster and little wars. All of this adds up to an aging population. The miracles of medicine have produced an older population. While the United States doubled in population in the last 50 years, those 65 years of age and older quadrupled in number. What does this population demand?

MEDICAL ECONOMICS IN AN OLDER POPULATION

With increasing years of living, the older population demand security — security in home, income, recreation and medical care. While years are added to life, the demand is for life to be added to years. As more and more elders become the dominant group in our population, their voices unite in strength to demand. Senior citizens are rapidly becoming the majority in the voting power of the nation — and have a strong lead in northern New England. Those concerned with plans for ade-

*Director of Health Studies and Associate Professor of Preventive Medicine, University of Vermont, College of Medicine.

quate purchasing power of medical care must take note of the demands of this increasingly larger group in the population.

Attention need only be directed to amendments to the Social Security provision, passed into law in the last Congress. This should tell us that organized opposition to these amendments was of little effect. It is possible to cast the burden of security from the elder to the younger. The time has come for objective analysis of the role medicine is to play in the scheme of things. Objective analysis usually leads to change. That change can be for the best if the principle of professional independence does not preclude constructive change. Both must exist. There is a phrase in the law known as "the last clear chance." It applies to tort situations in which the prisoner on trial is considered as having taken advantage of his last clear chance to avoid disaster. Is medicine facing a "last clear chance"?

THE WILL PROVIDES THE WAY

Maine, New Hampshire and Vermont have a unique approach to understanding medical needs of rural areas. A combination of medical society officials, commissioners of health, deans of Dartmouth and Vermont medical schools and the chairman of the curriculum committee of the Vermont medical school comprise a Regional

Medical Needs Committee. This committee functions in an advisory capacity to the Director of Health Studies. The University benefits in gaining experience in communities of the three states in order better to understand the problems of physicians and communities. Medical societies benefit in sharing this experience through their designated officials in order to "diagnose and treat" the best method to meet public demand without loss of principle of professional independence. Health departments benefit in sharing with medical society officials and others on the committee their responsibility and means of meeting the public obligation that is theirs. The Regional Medical Needs Committee has attained wide recognition in its efforts to work together toward the solution of many problems. It remains for this committee to become officially recognized through appropriate legislation in each of the three states. It can then be a force for setting the pace in finding solutions to the complicated business of meeting public demand without surrender of representative principles of operation.

The combination of University, Medical Societies and Health Departments should lead to solutions of searching questions that face us in the up-hill struggle to preserve the best, improve the poorest and discard the worst in meeting public demand of to-day.

Across The Desk

Bills introduced into the 98th Legislature of the State of Maine with medical implications of interest to the Doctors of Medicine of the State of Maine. This list is not complete.

L.D. 196 Senator Fournier of York
Relating to: **Registration of Podiatrists**
Purpose: Permission for certain podiatrists to prescribe narcotics in connection with the treatment of the human foot.

This will apply to only those podiatrists who are "duly" licensed (Examining Board made up of two members of the Board of Registration of Medicine and two podiatrists) and graduates of an accredited school of podiatry (four years).

This proposal was presented to the Council of the Maine Medical Association by the podiatrists and given tentative approval. The Legislative Committee of the Maine Medical Association reviewed the bill and also approved it. This brings Maine law in conformity with seventeen of the states. Permission to use Novocain® by the same group of podiatrists was granted at the last session of the Legislature two years ago.

L.D. 282 Miss Cormier of Rumford
Relating to: **The Maine Committee on the Mentally Retarded**
Purpose: To reactivate a Maine Committee on Problems of the Mentally Retarded. To continue the study begun by the Citizens Committee. The Committee will meet six times a year and members will be paid for their expenses only. The appropriation involved would be \$1800.

L.D. 340 Senator Cole of Waldo
Relating to: **Interstate Compact on Mental Health**
Purpose: To permit the hospitalization and treatment, by reason of mental illness, of any person physically present in the State, regardless of residence, settlement or citizenship qualifications.

L.D. 344 Senator Lord of Cumberland
Relating to: **An Amendment to the Charter of the Associated Hospital Service of Maine**

Purpose: To allow Blue Shield to handle Medicare.

In its corporate charter, the Associated Hospital Service of Maine (Blue Shield) is authorized to operate a *Plan*. This amendment would enable the Associated Hospital Service to operate more than one plan; and with the approval of the Insurance Commission of Maine the Associated Hospital Service could utilize its organization and facilities to perform services on a cost basis for the government.

L.D. 694 Senator Martin of Kennebec
Relating to: **Tri-State Regional Medical Needs Board (Maine, New Hampshire and Vermont)**

Purpose: To provide *advisory service* to voluntary and official health agencies and educational institutions concerned with health, and to insure the availability of day to day medical care in rural areas of Maine, New Hampshire and Vermont.

The "Board" is to be composed of the same officers who now constitute the Regional Medical Needs Committee — the president, vice-president and president-elect of the medical societies of Vermont and New Hampshire and the president, president-elect and executive director of the Maine Medical Association; the commissioners of health of the three states; the deans of the University of Vermont and Dartmouth Medical Schools; the chairman of the curriculum committee and director of health studies of the University of Vermont College of Medicine.

L.D. 772 Mr. Stanley of Bangor
Relating to: **Physical Incapacity Voting**

Purpose: To permit a registered nurse or a Christian Science Practitioner to certify that a person is physically incapacitated and therefore eligible to vote by means of the absentee ballot. (See L.D. 1061)

L.D. 830 Miss Cormier of Rumford
Relating to: **Funds for Medical and Dental Education for New England Board of Higher Education**
Purpose: To encourage existing medical schools of New England to accept more students from Maine by granting to each New England medical school \$2500 per student per year for each student it enrolls in excess of the number of New England (Maine) students enrolled on October 1, 1956 (\$1500 per student per year to New England dental schools).

Each state would appropriate \$2500 for each medical student from that state and \$1500 for each dental student from that state in excess of the number enrolled on October 1, 1956.

The New England Board of Higher Education will serve as the Agency of the Compacting States for receiving and disbursing these funds.

The plan would become effective upon its adoption by any one of the compacting states.

Each medical school now expends about \$4600 per year for each student. The student pays the school less than half of what it costs to educate him. This bill is an attempt to distribute some of the financial burden

to those areas that derive indirect benefits from the schools. It will cost the State of Maine about \$20,000 per year.

L.D. 891 Mr. Browne of Bangor
Relating to: **Employment of Physicians by Municipalities**

Purpose: An amendment which changes the phrase "subsidize a physician" to "employ a physician."

L.D. 965 Mr. Babineau of Brunswick
Relating to: **Moneys to Obtain Plasma**

Purpose: To return to the General Fund the unused part of \$15,375 appropriated for the purpose of supplying materials in connection with the accumulation, storage and maintenance of 5,000 units of liquid plasma and 500 units of dried plasma to be available in the event of a disaster.

Comment: The proposal to stockpile is excellent. However, there are plasma expanders that are less expensive, stockpile well, and do not have the danger of homologous serum jaundice. In Korea a significant percentage of those who received multiple units of plasma incurred homologous serum jaundice.

L.D. 997 Senator Lord of Cumberland
Relating to: **Revising Laws Relating to Registered and Practical Nurses**

Purpose: To amend the statutes so that licensing and examination fees are increased and licenses are issued annually, and minimum requirements for courses of practical nursing be made twelve months.

L.D. 1061 Mr. Stanley of Bangor
Relating to: **Limited Medical Services under Workmen's Compensation Act**

Purpose: To amend the statutes to include treatment of Workmen's Compensation cases by prayer or spiritual means through the teachings of any established church without use of drug or material remedy.

L.D. 1088 Senator Briggs of Aroostook
Relating to: **Age of Admission to State Hospitals**
Purpose: At present no person under the age of 12 years can be admitted to a State Hospital. This bill would amend the statutes to admit insane minors over 8 years of age to State Hospitals.

L.D. 1091 Senator Lord of Cumberland
Relating to: **Charges for Patients at State Sanatoriums**

Purpose: To change the public laws so that no charges shall be made by the State of Maine for such services to relatives of such patients or from the city, town or plantation of such patient's legal settlement; and no official or employee of the State shall make an effort to collect payment for such services. Such patients or their relatives may contribute payment to the State for treatment of patients, and any such funds collected in this manner shall be credited to the General Fund.

L.D. 1134 Mr. Hendsbee of Madison
Relating to: **Authorizing Research of Cystic Fibrosis by the Department of Health and Welfare of the State of Maine**

Purpose: To appropriate from the General Fund \$10,000 for each fiscal year to begin any study, research and treatment necessary to find a cure for this disease.

L.D. 1200 Mr. Morrill of Harrison
Relating to: **Increasing the Number of Medical Examiners for Cumberland County**

Purpose: To increase the number of medical examiners for Cumberland County from six to seven.

Note: There is one other bill designed to increase the number of medical examiners in Penobscot County from six to nine. The actual copy of this bill is not available at this time. It is hoped that any increase in the number of medical examiners will include outlying areas such as the island of Vinalhaven.

L.D. 1211 Senator Lord of Cumberland
Relating to: **Commitment of Persons with Contagious Tuberculosis**

Purpose: To provide a legal mechanism whereby per-

sons who have tuberculosis and who are contagious may be committed to the tuberculosis sanatoriums when they are deemed dangerous to others.

L.D. 1261 Senator Woodcock of Penobscot
Relating to: **Creating a Hospital Lien Law**

Purpose: To allow hospitals to collect bills for patient care directly from any award made to that patient for injury sustained when such injury was the cause of hospitalization or to allow the hospital to collect from the person or company responsible for the patient's injury. This is not applicable to cases under the Workmen's Compensation Act.

L.D. 1262 Senator Woodcock of Penobscot
Relating to: **Nursing Education**

Purpose: To authorize the State Board of Education to receive any federal funds that may be available for nursing education.

L.D. 1265 Senator Woodcock of Penobscot
Relating to: **Unclaimed Bodies**

Purpose: To provide expenses for the burial of unclaimed dead bodies.

? ?

Have you set aside these dates

JUNE 23 - 24 - 25

for the

104th Annual Session of the
Maine Medical Association

? ?



DEAN H. FISHER, M.D.
COMMISSIONER

State of Maine

Department of Health and Welfare

Study Of Newly Reported Tuberculosis Cases By Area
In Relation To Acceptance Of Sanatorium Treatment

(Data for this article on newly reported cases of tuberculosis in Maine during 1954, 1955 and 1956, with emphasis on place of residence and acceptance of sanatorium treatment was prepared by Miss Katharine D. Gay, R.N., Administrative Assistant of the Department's Division of Tuberculosis Control. The three State tuberculosis hospitals were transferred to the Department of Health and Welfare at the last session of the Maine Legislature.)

Among those interested in the control and treatment of tuberculosis in the State of Maine, the number of cases, their distribution, and the degree of acceptance of sanatorium care are important factors in shaping both present and future planning.

The Division of Tuberculosis Control has made this study* of the number of newly reported cases (exclusive of primary phase) and the number of sanatorium admissions, with respect to (1) the residence of the newly reported case and (2) the number of such cases who accept admission to a tuberculosis hospital. Admissions to the Veterans' Hospital as well as to the State Sanatoria are indicated.

At the present time there are three State Tuberculosis Hospitals located in the Northern, Central and Southwestern parts of the State, respectively.

Admissions to the three Sanatoria are assigned geographically by counties, a patient being admitted to the sanatorium which is nearest to his place of residence, or which is in an area in which he tends to carry on business activities, etc. It is logical that such divisions should fall along county lines, and with only a few exceptions these lines are followed.

Table I shows: 1. the counties from which residents are admitted to the respective sanatoria and 2. the population of the respective county groupings, as estimated by the Division of Vital Statistics for 1955.

Table II, shows by Sanatorium area (1) the number of new active cases of Tuberculosis (exclusive of prim-

TABLE I

<i>Sanatoria</i>	<i>Area Covered</i>	<i>Population Covered</i>
STATE		927,000
I. Northern Maine	Aroostook	
	Washington	132,200
II. Central Maine	Penobscot	
	Piscataquis	
	Somerset	
	Franklin	375,100
	Kennebec	
	Waldo	
	Hancock	
	Knox	
	Lincoln	
III. Western Maine	Sagadahoc	
	Oxford	
	Androscoggin	419,700
	Cumberland	
	York	

ary phase) reported to the Division of Tuberculosis Control in 1954, 1955, and 1956 respectively (2) the per cent each represents of the total number reported for the State as a whole.

Table III, indicates within the same county groupings (1) the number of new reported cases who applied and were admitted to a Tuberculosis Hospital in 1955 and 1956 respectively (admissions to both State and Federal Hospitals are shown) and (2) the per cent they represent of the total number of reported cases in the area.

Because of its geographic location only cases reported from the extreme Northern and Eastern Counties are assigned to the Northern Maine Sanatorium.

In the county groupings assigned to the Central Maine Sanatorium and the Western Maine Sanatorium there are several comparatively large centers of population. Table IV, shows (1) the number of new cases reported in selected cities in the Central Maine Sanatorium Area

*Some information covers a 2 year period, others a 3 year period. Unfortunately, no figures were readily obtainable for years prior to periods listed.

TABLE II

Sanatorium Area	New Active Tuberculosis Cases Reported*					
	Number			Per Cent		
	1954	1955	1956	1954	1955	1956
State	290	303	293	100	100	100
Northern Maine	63	45	45	22	15	15
Central Maine	103	120	131	35	40	45
Western Maine	124	138	117	43	45	40

* Exclusive of primary phase.

TABLE III

Sanatorium Area	1955				1956			
	Total Admissions	Per Cent Of Total New Reported Cases	Number Admitted To State San.	Number Admitted To Veteran's Hospital	Total Admissions	Per Cent Of Total New Reported Cases	Number Admitted To State San.	Number Admitted To Veteran's Hospital
Northern Maine	34	75.5	24	10	38	84.4	30	8
Central Maine	81	67.5	64	17	89	67.9	70	19
Western Maine	88	63.7	70	18	72	61.5	59	13

TABLE IV

Year	City	Number of Cases Reported	Per Cent of Total Cases Reported in the Area
1955	Augusta	5	4.1
	Waterville	7	5.8
	Bangor	6	5.0
1956	Augusta	5	3.8
	Waterville	1	.8
	Bangor	17	12.9

TABLE V

Year	City	Number of Cases Reported	Per Cent of Total Cases Reported in the Area
1954	Greater Portland	37	35.5
	Lewiston-Auburn	15	12.0
1955	Greater Portland	52	37.7
	Lewiston-Auburn	16	11.6
1956	Greater Portland	56	39.0
	Lewiston-Auburn	5	4.2

in 1955 and 1956 respectively and (2) the per cent they represent of the total number of cases reported in the area.

Table V, indicates (1) the number of new cases reported in selected cities in the Western Maine Sanatorium Area in 1954, 1955 and 1956 respectively and (2) the per cent they represent of the total number of cases reported in the area.

SUMMARY

The figures submitted in the foregoing tables appear to indicate that:

- 1. The five counties from which tuberculosis patients

are assigned to the Western Maine Sanatorium comprise a population group larger than that represented by areas assigned to the other sanatoria.

2. In two of the three years for which reports are tabulated the greatest number of cases and the largest per cent of the total number of cases reported in the State came from the Western Maine Sanatorium area.

3. In the two years tabulated, admissions to Western Maine Sanatorium in 1955 exceeded those to Central Maine Sanatorium by 16, and in 1956 fell below by 21.

4. By far the largest number of cases reported from any given section of the State are from the "Greater Portland Area" suggesting that the greatest concentration of cases is in the Western Maine Sanatorium Area.

Report On A New Program For Services For Mentally Retarded Pre-school Children

ELLA LANGER, M.D., *Director*

Division of Maternal and Child Health, Department of Health and Welfare

Last year the Congress appropriated special funds for programs for mentally retarded children to be administered within the Divisions of Maternal and Child Health. Several states applied for those funds by submitting plans and Maine is one of the states which received approval of the plan and subsequently the Federal funds to carry it out. The services offer diagnostic and evaluation clinic services and follow-up to children up to the age of five years. The clinic program has been started in Waterville, on a demonstration basis.

This is a diagnostic clinic designed to discover type and extent of retardation in the preschool child, followed by parents' counseling and guidance. It is held on a monthly basis. At each clinic a maximum of four cases will be evaluated and completely worked up during the two sessions — morning and afternoon. Children up to the age of five years may be referred to the division. They will be placed on the waiting list. Clinic attendance will be by appointment only.

Clinics will be staffed by a pediatrician, psychiatrist, psychologist, public health nurses, psychiatric social service; also volunteers available through the Central Maine Association for Mentally Retarded Children. Other services such as speech, nutrition, consultation by

specialists, will be provided. Hospitalization for diagnostic purposes will be available and provided if the parents are unable to pay for it.

This program will include a complete study of the child medically and psychologically. If it is established that the child is mentally retarded, the degree of retardation will have to be determined, i.e. whether the child is in the educable group, or trainable, or untrainable. It is expected that many of the mentally retarded children seen at the clinic can be cared for at home and need not be institutionalized.

A discussion period held by the team members will follow each clinic. At that time plans for treatment, follow-up care including parents' counseling and guidance in regard to management and training of the child, will be discussed. It is hoped that the mentally retarded child as well as the parents will benefit by such evaluation and intensive follow-up care.

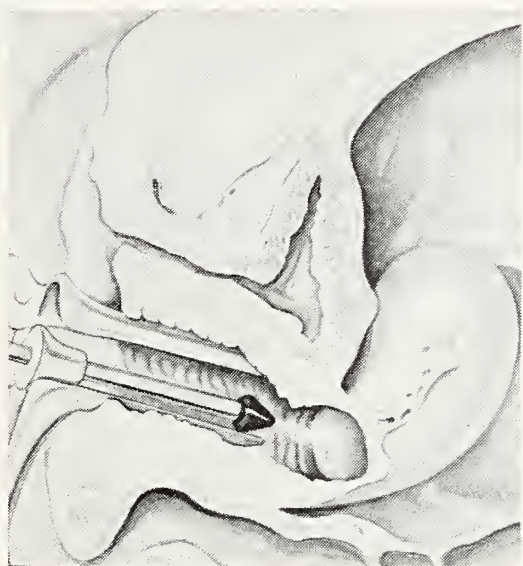
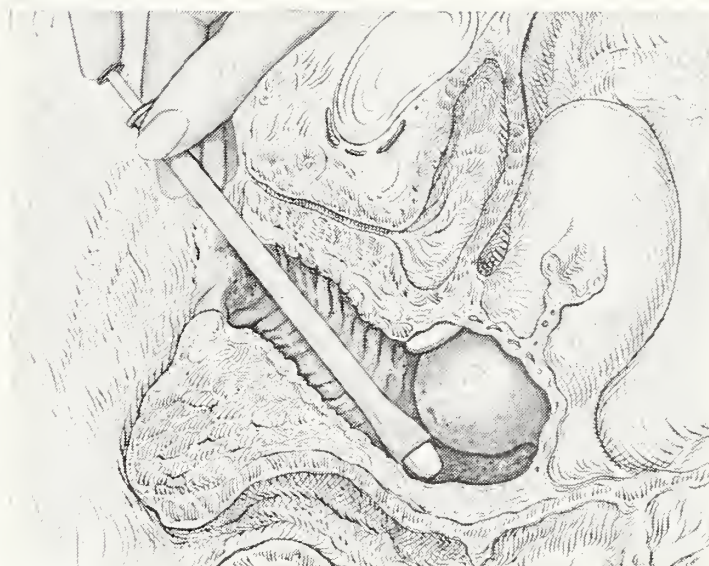
Clinics will be held at the Thayer Hospital in Waterville from 9:00 to 12:00 a.m., and 1:00 to 5:00 p.m., on the following dates: March 6, 1957, April (No clinic due to construction at the hospital), May 1, June 5, July 3, August 7, September 4, October 2, November 6, December 4.

REFRESHER COURSE IN FLUID AND ELECTROLYTE METABOLISM

Central Maine General Hospital - Lewiston, Maine

April 24, May 8, 15, 22, 29, June 5 and 12, 1957

PROGRAM ON PAGE 142

COMPREHENSIVE VAGINITIS REGIMEN*Powder Insufflation**Tablet Insertion*

Floraquin® Rebuilds the Defense Mechanism in Vaginitis

Combined office and home treatment with Floraquin provides a comprehensive regimen which encourages restoration of the normal "acid barrier" to pathogenic infection.

Vaginal secretions normally show a high degree of protective acidity (pH 3.8 to 4.4). When this "acid barrier" is disturbed, growth of benign Döderlein bacilli is inhibited and that of pathogens encouraged. Floraquin not only provides an effective protozoacide and fungicide (Diodoquin®) destructive to pathogenic trichomonads and yeast, but also furnishes sugar and boric acid for reestablishment of the normal vaginal acidity and regrowth of the normal protective flora.

Suggested Office Floraquin Insufflation

"... the vagina is treated daily by swabbing with green soap and water, drying and insufflation of Floraquin powder."*

Suggested Home Floraquin Treatment

"The patient is also issued a prescription for Floraquin vaginal suppositories which she is instructed to insert high into the vagina each evening. On the morning following each application of these suppositories, the patient should take a vinegar water douche. . . ."

A Floraquin applicator is supplied with each box of 50 Floraquin tablets. G.D. Searle & Co., Chicago 80, Illinois, Research in the Service of Medicine.

*Williamson, P.: Trichomonad Infestation, M. Times 84:929 (Sept.) 1956.

SEARLE



ANSWERING

QUESTIONS



What Makes Blue Shield Different?

One frequently hears doctors ask, "Isn't Blue Shield just 'another insurance company'?" This question usually comes from a member of the generation of new doctors who have come into practice since the early '40's, and who know little of the desperate challenge that gave rise to the Blue Shield idea and the hard work with which its accoucheurs gave it birth.

Blue Shield represents a vast and triumphant effort on the part of American medicine to prove to the people of the United States that, with their help, their doctors can solve urgent problems of medical economics without governmental interference or dictation. Blue Shield was created at a time when the insurance industry questioned the actuarial feasibility of voluntary medical care insurance on any large scale, and even many doctors feared that a voluntary program would inevitably lead to a compulsory health insurance system under government auspices.

Blue Shield has little in common with commercial accident and health insurance beyond the fact that it utilizes actuarial principles. Where the insurance company underwrites selected groups to produce a profit, Blue Shield, reflecting the service ideals of the medical profession, makes its services available to the entire community, at rates based on the needs and experience of the community — including most particularly those people in the low income groups who most need medical prepayment protection.

Where commercial insurance companies offer cash allowances which may or may not have any relation to the doctor's normal charge for his services, Blue Shield's

schedules of payment are negotiated and approved by the local medical profession. In most areas Blue Shield benefits take the form of fully paid professional services, through the cooperation of the "participating physicians." Even where "service benefits" are not provided by formal agreement of the doctors, Plan schedules generally attempt to approximate the normal charges of the local physicians for services rendered people in the lower income brackets, and the local physicians frequently accept these fees as full payment.

Blue Shield Plans are distinguished by non-profit operation, which means that their only purpose is service to the people and their doctors. Non-profit operation also means that all the funds contributed by the subscribers are available for payment of benefits, with a minimum retained for actual operating costs and reserves for future claims.

Over and above all requirements of state law, Blue Shield Plans are required to maintain strict "membership standards" in order to use the name and symbol "Blue Shield." These standards provide that the Plan must have the continuous approval of the local medical society; must render an annual report to the society; and must secure the formal participation of at least 51% of all the physicians in the Plan area.

Blue Shield utilizes insurance principles, but, because of the participation of the great majority of American physicians, it is able to transcend the limits of insurance — to become a true community service on behalf of America's physicians.

A Health Fair To Be Held In Wells, Maine

MELVIN BACON, M.D., Sanford, Maine*

The Wells Health Council will play host to the various Health Councils in York County and parts of Cumberland County on April 16th and 17th at a Health Fair. This Fair will be opened to the laity, the general public, and interested professional groups. The locale of the Fair will be at Wells High School, Wells, Maine, Tuesday, April 16th, from 5 p.m. to 10 p.m. and on Wednesday, April 17th, from 10 a.m. to 10 p.m.

The Health Fair is probably the first of its kind to be held in the State of Maine and has the approval of the York County Medical Society. Admission, X-rays, blood and urine tests, movies and literature are to be free.

Members of the various Health Councils in York and parts of Cumberland County will participate at a Health Institute during this endeavor. The Health Councils are to conduct a program of their own apart from the Fair, featuring a luncheon with a speaker. Only its members will attend. A private meeting shall follow.

PARTICIPANTS

Various groups will be well represented at this event. The Medical Services Committee who have been selected to help in different capacities consists of M. K. Moulton, M.D., West Newfield, President of the York County Medical Society, Chairman; C. E. Richards, M.D. of Alfred and Sanford; M. Bacon, M. D., Sanford; M. Grant, R. N., Wells; Mrs. M. Miller, President of the Wells Health Council.

Other participants will include J. C. Myer, M.D., Sanford, who will represent the Maine Society for the Conservation of Sight; Professor W. E. Fitzgerald of the Science Department of Nason College, Springvale; F. Barden, M.D., Kennebunk, Maine, Deputy Director No. 3 of the York County Civilian Defense and C. Hartley, Sanford, County Director of this group. The York County Tuberculosis Association has as its representative, its Executive Director, Mrs. D. Locke.

The Professional Nurses Group of Sanford and Springvale, will be under the direction of Miss A. Grant, R. N., Administrator of the Goodall Hospital and Mrs. Evelyn Somerset, R.N. of Sanford. Mrs. E. W. Holland, R.N., Sanford, is the President of this group and also President of the York County Medical Society Auxiliary. Mrs. F. Barden, Kennebunk, will head the program of the latter group. The York Group of Professional Nurses, of which Mrs. D. Hume, R.N. is President, another participant. Members of the various Health Councils, Physician members of the York County Medi-

cal Society, Nurses and Technicians and other lay individuals will also take part. These aforementioned are but a few of the many who will be associated with this endeavor.

EXHIBITS

The following are some of the many exhibits which will be present: The X-ray Unit of the Tuberculosis Division of the Department of Health and Welfare is to be used for free chest X-rays. Other exhibits include the Maine Heart Association, the American Red Cross, the Dairy Council of Maine, the York County Dental Society. An industrial exhibit on accident prevention is to be another undertaking. There will be two demonstrations by the Science Department of Nason College.

The York County Civilian Defense will use a fully equipped trailer as their contribution. In addition, the York County Tuberculosis Association will play their role and, as one of their undertakings, will have a series of normal and abnormal chest X-rays.

The Professional Nurses Groups of both Sanford and York will co-sponsor a Nursing Exhibit. The offering of the York County Medical Society Auxiliary will include a booth concerning the sale of "Today's Health," which is the magazine for the laity, published by the American Medical Association. Subscriptions will be available for this publication.

The Kennebunk Health Council is to have charge of the registration of the Public. Weight Control will be under the jurisdiction of the York County Extension Service. Alcoholic rehabilitation will be the offering of the State Bureau of Health and Welfare. Mosquito control is another feature. Blood pressures will also be taken.

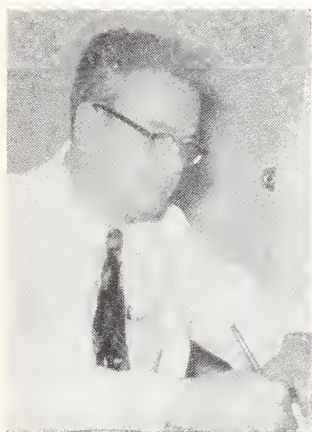
The York County Medical Society will have exhibits on the School Health Program, Appendicitis, and Home Accidents. In addition, they will also have a Diabetes Exhibit and are to offer free tests for sugar in urine and blood sugars done for all those, showing sugar in their urine, desiring it. Blood Typing and RH Factors will be done and also weighing and measuring. Fluoridation is to be the project of the Kennebunkport Health Council. Movies are to be shown and literature distributed.

The Maine Cancer Society, Multiple Sclerosis Society, Cerebral Palsy Group, the Pride Home and the Pine Tree Society for Crippled Children will be other exhibitors. The Maine Society for Conservation of Sight will also have a presentation sponsored by the Wells Lions Club. Other exhibits will also be in evidence.

Continued on page 146

*Chairman of Committee of the York County Medical Society for the Wells Health Fair.

Presidents and Secretaries of County Medical Societies



John J. Pearson, M.D.

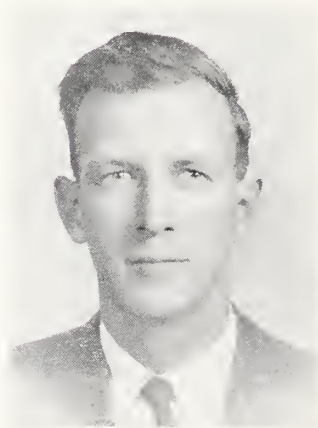
Old Town

President
Penobscot County
Medical Association

Warren G. Strout, M.D.

Bangor

Secretary
Penobscot County
Medical Association



Marion A. K. Moulton, M.D.

West Newfield

President
York County
Medical Society



County Society Notes

HANCOCK

March 13, 1957

The monthly meeting of the Hancock County Medical Society was held at the Hancock House, Ellsworth. There were 15 members and 2 guests present. The meeting was opened by the President, Robert F. Russell, M.D.

Llewellyn W. Cooper, M.D., and Walter W. Herbert, M.D., reported on the progress of the polio vaccine program and explained how it was to be carried out in Hancock County. A motion was passed that a member of the society from each local district be appointed to be responsible for carrying out the program in his area.

A further motion was passed that the injections be given for \$2.00 for those not eligible for free vaccine, but that members of the society would donate their professional services free.

The speaker of the evening was Warren G. Strout, M.D., of Bangor, who gave a very informative and interesting talk on "Recent Advances in Anesthesiology." After a brief discussion period the meeting was adjourned.

ARTHUR M. JOOST, JR., M.D.
Secretary

PENOBSCOT

February 19, 1957

The February meeting of the Penobscot County Medical Association was held at the Penobscot Valley Country Club.

The President, John J. Pearson, M.D., of Old Town, called the meeting to order. Sidney Chason, M.D., of Bangor, was elected to membership in the association. The secretary read resolutions on the death of J. Albert Lethiecq, M.D., which were adopted as read.

The committee on eye examinations for school children reported that the Snellen test, properly administered, should be used for eye examinations in school children. This report, read by Jay K. Osler, M.D., of Bangor, was approved by the association.

George W. Wood, III, of Brewer, read the report concerning the poliomyelitis program as drawn up by the Poliomyelitis Vaccination Committee. The report was amended concerning the time that doctors' offices would be considered vaccination centers. It was decided that this would be limited to Friday afternoon until 6:00 P.M. The report was then accepted by the association.

Wilbur B. Manter, M.D., of Bangor, reviewed the meetings of the House of Delegates in respect to Medicare and Blue Shield. A motion was made and seconded that the delegates be instructed to approve Blue Shield Plan B at their next meeting. Suggestions from the House of Delegates limiting the American Medical Association Delegate to three terms and lowering the council quorum from 7 to 6 were approved by the association.

There were 63 members and guests present.

WARREN G. STROUT, M.D.
Secretary

Robert J. Barrett, Jr., M.D., of Bangor was appointed a Fellow in the American College of Allergists on March 21 at the national meeting in Chicago.

Dr. Barrett was graduated from Georgetown University School of Medicine in 1943. He is a member of the New

England Society of Allergy, the Penobscot County Medical Association, the Maine Medical Association, and the American Medical Association. He was appointed Associate Fellow of the American College of Allergists in 1949.

Dr. Barrett is married and has three children; Robert J., 3rd, Bonny Kay, and Mark.

YORK

March 13, 1957

The bi-monthly meeting of the York County Medical Society was held at the Henrietta Goodall Hospital in Sanford. Miss Alice A. Grant, R.N., Administrator, was the hostess.

Frank N. Allan, M.D., of Boston, Executive Director of the Medical Department of the Lahey Clinic, gave a very interesting, and instructive talk on "Endocrinology in General Practice" which was illustrated with lantern slides. A question period followed.

Harry Lapirow, M.D., of Kennebunk, and Michael M. P. Magaudda, M.D., of Old Orchard Beach, were elected to membership.

The society voted to accept Blue Shield Plan B, and to give polio immunizations to adults at a nominal fee.

The membership voted to charge \$4.00 for office calls, \$5.00 for house calls to 6 p.m., \$6.00 for house calls after 6 p.m. and \$7.00 after midnight. These rates will be effective April 1.

A clinical meeting will be held in Boston on May 27, 1957, and the members will attend the Yankee-Red Sox ball game in the evening. Melvin Bacon, M.D., of Sanford, will arrange this meeting.

There were 28 members and 1 guest present. Members: Melvin Bacon, M.D., Frank W. Barden, M.D., Stephen A. Cobb, M.D., Kenneth J. Cuneo, M.D., William E. Dionne, M.D., Robert J. Downing, M.D., Robert F. Ficker, M.D., Carl M. Haas, M.D., Owen B. Head, M.D., Alvin A. Hoffman, M.D., Marcel P. Houle, M.D., Herbert J. Hopkins, M.D., James S. Johnston, M.D., Charles W. Kinghorn, M.D., Robert S. LaFond, M.D., Joseph R. LaRochelle, M.D., Louis C. Lesieur, M.D., Kenneth E. Leigh, M.D., James H. Macdonald, M.D., Marion A. K. Moulton, M.D., Marcel D. Ouellette, M.D., Joseph M. Patane, M.D., Carl E. Richards, M.D., Roger J. P. Robert, M.D., Maurice Ross, M.D., Robert D. Vachon, M.D., Leopold A. Viger, M.D., and Eugene P. Wolfahrt, M.D. Guest: Frank N. Allan, M.D., of Boston.

The next meeting will be held at the Portsmouth Air Base.

CHARLES W. KINGHORN, M.D.
Secretary

NEW MEMBERS

CUMBERLAND

Charles W. Capron, M.D., 22 Bramhall Street, Portland
Robert H. Pawle, M.D., Steep Falls
Morrill Shapiro, M.D., 29 Deering Street, Portland

KENNEBEC

Vaughn R. Sturtevant, M.D., 33 College Avenue, Waterville

PENOBSCOT

John E. Burke, M.D., 268 State Street, Bangor
Sidney Chason, M.D., 126 Forest Avenue, Bangor

WALDO

Ward A. Albro, M.D., 27 Northport Avenue, Belfast

YORK

Harry Lapirow, M.D., Kennebunk
Michael M. P. Magaudda, M.D., 39 Old Orchard Street, Old Orchard Beach

COUNTY SOCIETIES

ANDROSCOGGIN

President, John A. James, M.D., Auburn
Secretary, Donald L. Anderson, M.D., Lewiston

AROOSTOOK

President, Stephen S. Brown, M.D., Mars Hill
Secretary, Clyde I. Swett, M.D., Island Falls

CUMBERLAND

President, Paul C. Marston, M.D., Kezar Falls
Secretary, Stanley E. Herrick, Jr., M.D., Portland

FRANKLIN

President, Hays G. Bowne, M.D., Farmington
Secretary, Paul E. Floyd, M.D., Farmington

HANCOCK

President, Robert F. Russell, M.D., Penobscot
Secretary, Arthur M. Joost, Jr., M.D., Bucksport

KENNEBEC

President, Arthur H. McQuillan, M.D., Waterville
Secretary, Arch H. Morrell, M.D., Augusta

KNOX

President, David V. Mann, M.D., Camden
Secretary, Parker Heath, M.D., Rockland

LINCOLN-SAGadahoc

President, Stanley R. Lenfest, M.D., Waldoboro
Secretary, George W. Bostwick, M.D., Newcastle

OXFORD

President, Norman M. Jackson, M.D., Rumford
Secretary, Harry L. Harper, M.D., South Paris

PENOBSCOT

President, John J. Pearson, M.D., Old Town
Secretary, Warren G. Strout, M.D., Bangor
Treasurer, Dexter J. Clough, 2nd, M.D., Bangor

PISCATAQUIS

President, Ralph C. Stuart, M.D., Guilford
Secretary, Charles H. Lightbody, M.D., Guilford

SOMERSET

President, Richard P. Laney, M.D., Skowhegan
Secretary, Harland G. Turner, M.D., Norridgewock

WALDO

President, Ernest W. Stein, M.D., Pittsfield
Secretary, John A. Caswell, M.D., Belfast

WASHINGTON

President, Hazen C. Mitchell, M.D., Calais
Secretary, Karl V. Larson, M.D., East Machias

YORK

President, Marion A. K. Moulton, M.D., West Newfield
Secretary, C. W. Kinghorn, M.D., Portsmouth, N. H.

Announcements

Central Maine General Hospital, Lewiston, Maine Refresher Course in Fluid and Electrolyte Metabolism

Conducted by

JOHN H. BLAND, M.D.

Associate Professor of Clinical Medicine, University of Vermont
College of Medicine; Attending Physician, Mary Fletcher and
Bishop DeGoesbriand Memorial Hospitals

ETHAN A. H. SIMS, M.D.

Associate Professor of Medicine, University of Vermont College
of Medicine
Associate Attending Physician, Mary Fletcher Hospital

ARNOLD S. RELMAN, M.D.

Associate Professor of Medicine, Boston University School of
Medicine; Associate Member, Evans Memorial, and Visiting
Physician, Massachusetts Memorial Hospitals

WILLIAM B. SCHWARTZ, M.D.

Associate Professor of Medicine, Tufts University School of
Medicine; Physician, New England Center Hospital

April 24, 1957 John H. Bland, M.D.

Introduction to Water and Electrolyte Metabolism; Renal,
Pulmonary, Gastrointestinal and Dermal Regulation of
Water and Electrolyte; the Dehydration Reaction; Regula-
tion of the Hydrogen Ion; Normal Volumes, Concentra-
tions and Distributions Compared to Abnormal; Interpre-
tation of Serum Electrolyte Studies; Balance Study and
Total Body Composition Data.

May 8, 1957 Ethan A. H. Sims, M.D.

Sodium Metabolism; Hyponatremic Syndromes; Hyper-
natremic Syndromes.

May 15, 1957 Ethan A. H. Sims, M.D.

Potassium Metabolism; Hypokalemic Alkalosis; Hypo-
kalemic and Hyperkalemic Syndromes.

May 22, 1957 John H. Bland, M.D.

The Technique of Management of Metabolic Problems.

May 29, 1957 John H. Bland, M.D.

Metabolism of Trauma, Recognition and Management;
Control of Hydrogen Ion, Technique of Management.

June 5, 1957 Arnold S. Relman, M.D.

Renal Insufficiency Reversible and Irreversible — Diag-
nosis and Treatment of Water, Electrolyte, Hydrogen Ion
Abnormalities.

June 12, 1957 William B. Schwartz, M.D.

Water and Electrolyte Metabolism Normal and Abnormal
in Congestive Circulatory Failure.

This course will total 14 hours and is designed to be of
value to all practicing physicians. A certification for 14 hours
of post-graduate medical education will be given to each physi-
cian on completion of the course.

All lectures will be held at the Central Maine General Hos-
pital from 4:00 p.m. to 6:00 p.m.

FEE, \$30.00. Address request for registration form to:
Ralph Zanca, M.D., 86 Pine Street, Lewiston, Maine. Checks
should be made payable to Central Maine General Hospital.

New Film Available

The film, "Urine Sugar Analysis for Diabetics," developed
in cooperation with the medical profession, is available at
no charge to the Medical and Allied Professions through
Ames Company, Inc.

The film was made as a visual aid to be used in the
education of diabetic patients and shows the relationship
between carbohydrates and insulin. It also explains in lay
language the meaning of various diabetic conditions. It has
been produced on 16 mm. film in color and sound track with
a running time of approximately 10 minutes. Appropriate
"hand-out" literature accompanies the film.

Showings at Diabetic Clinics, Diabetic Lay Societies and
other diabetic groups must be requested by the Medical or
Allied Professions to Ames Company, Inc., Elkhart, Indiana
or an Ames representative.

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Tuberculosis Abstract

Chronic diffuse obstructive emphysema is the result of expiratory bronchiolar obstruction. The x-ray diagnosis may be incorrect and entirely misleading. The most characteristic functional finding is the diminution in the maximum breathing capacity and the one-second timed vital capacity. There may be carbon dioxide retention, but frequently arterial oxygen saturation is normal unless the patient is put under conditions of physical stress.

*The Maine Trudeau Society, Medical Section, Maine Tuberculosis Association

Department Of Health And Welfare Services For Crippled Children

ORTHOPEDIC CLINICS

PORTLAND — MAINE MEDICAL CENTER
9:00 a.m. April 8, May 13, June 10.
LEWISTON — CENTRAL MAINE GENERAL HOSPITAL
9:00 a.m. April 12, May 17, June 21.
RUMFORD — COMMUNITY HOSPITAL
1:30 p.m. June 19.
WATERVILLE — THAYER HOSPITAL
1:30 p.m. June 27.
ROCKLAND — KNOX COUNTY HOSPITAL
1:30 p.m. May 16.
MACHIAS — NORMAL SCHOOL
1:30 p.m. April 3.
PRESQUE ISLE — NORTHERN MAINE SANATORIUM
9:00 a.m. and 12:30 p.m. May 7.
FORT KENT — PEOPLES BENEVOLENT HOSPITAL
10:00 a.m. May 8.
*BANGOR — EASTERN MAINE GENERAL HOSPITAL
1:00 p.m. May 23.
AUGUSTA — AUGUSTA GENERAL HOSPITAL
1:00 p.m. April 25.

CARDIAC CLINICS

PORTLAND — MAINE MEDICAL CENTER
9:00 a.m. Every Friday (Holidays excepted).
BANGOR — EASTERN MAINE GENERAL HOSPITAL
9:00 a.m. April 12-26, May 10-24, June 14-28.

CLEFT PALATE EVALUATION CLINICS

PORTLAND — MAINE MEDICAL CENTER
10:00 a.m. May 14.

DIVISION OF MATERNAL AND CHILD HEALTH PEDIATRIC CLINICS

*BANGOR — EASTERN MAINE GENERAL HOSPITAL
1:30 p.m. April 26, May 24, June 28.
*PRESQUE ISLE — NORTHERN MAINE SANATORIUM
1:30 p.m. May 22.
*WATERVILLE — THAYER HOSPITAL
1:30 p.m. April 2, May 7, June 4.
*Several of the Pediatric Clinics, and also Bangor CC Clinics, will be two-session clinics. ADDITIONAL CLINICS WILL BE ANNOUNCED LATER.

BY APPOINTMENT ONLY

All Physicians Welcome

The Fourth Annual Tri-State Meeting of the Academies of General Practice of Vermont, New Hampshire and Maine — Clinical Session, Portland, Maine, May 9, 1957.

New England Pediatric Society Award

To stimulate an interest in clinical investigation and accurate reporting of pediatric problems, the New England Pediatric Society is offering an award of \$200.00 for the best paper submitted by an intern, resident or fellow, who is connected with a teaching hospital or medical school in the New England Area. The paper should deal with one or more pediatric cases, of special interest or significance, with appropriate supporting literature, and discussion. The winner will be announced at our first meeting of the Society in the fall, and the paper will be submitted for publication in the New England Journal of Medicine.

Papers should be submitted to Dr. Harry Shwachman, Secretary, New England Pediatric Society, 300 Longwood Avenue, Boston, Massachusetts, by June 30, 1957.

Edward T. Wakeman, M.D., President

An Invitation To Attend The First Pan American Cancer Cytology Congress Eden Roc Hotel, Miami Beach, Florida April 25 to 29, 1957

Sponsors of the Congress are:

The Cancer Cytology Foundation of America, Inc.
Cancer Institute at Miami, Florida
Southern Society of Cancer Cytology
University of Miami, Miami, Florida

Financial Aid has been received from:

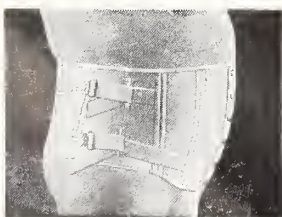
The Department of Health, Education and Welfare of the United States Public Health Service
Public Health Foundation for Cancer and Blood Pressure Research, Inc., Stamford, Conn.
Williams Foundation, Buenos Aires, Argentina

J. Ernest Ayre, M.D., President

World Congress Of Gastroenterology

This Congress is being sponsored by the International Society of Gastroenterology and the host organization in this country is the American Gastroenterological Association. The meeting is to be held in Washington, D. C., May 25-31, 1958 at the Sheraton Park Hotel. All physicians interested in gastroenterology are cordially invited to attend. The Chairman is Harry L. Bockus, M.D. Anyone desiring information regarding the program, housing, etc. may direct all correspondence to: H. M. Pollard, M.D., Secretary-General, University Hospital, Ann Arbor, Michigan.

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Six Ophthalmology Residency Fellowships Are Announced

Six additional Fellowships for Residents in Ophthalmology, to begin July 1st, 1957, have been announced by the Guild of Prescription Opticians of America, Inc., through its President Galen B. Kilburn, of Atlanta, Ga. Applications for these Fellowships must be received by May 15, 1957.

Each Fellowship is for a total of \$1,800, payable in monthly stipends over the period of a three-year Residency. The grants are limited to Residencies at approved institutions where full three-year Residencies are offered. Each grant is made for the entire three years, to begin the first year. Application forms and covering information are available by writing to FELLOWSHIPS, Guild of Prescription Opticians of America, Inc., 110 East 23rd Street, New York 10, New York.

Free Cardiac Surgery Program

National Jewish Hospital at Denver is expanding its cardiovascular program. It will consider applications for admission in behalf of patients suffering from cardiovascular defects amenable to surgical intervention, including mitral and aortic stenosis, congenital cardiac anomalies, etc. Definitive diagnosis is not necessary prior to admission, inasmuch as the hospital has a completely equipped cardiopulmonary physiology laboratory for this purpose. Patients are accepted without respect to race, religion, or national origin, and without charge. Only those unable to pay for private care are eligible. Periodic reports are made routinely to the referring physician and the patient is directed to report to him after discharge. Inquiries should be sent to Medical Director, National Jewish Hospital, Denver 6, Colorado.

Trudeau School Of Tuberculosis Forty-Second Annual Session 1957

The Trudeau School of Tuberculosis will present its Forty-second Annual Session Monday, June 3rd through Friday, June 21st, 1957. The concentrated three-week course will cover all aspects of pulmonary tuberculosis and also certain phases of other chronic chest diseases, including those of occupational origin.

As in the past the clinical material for the course will be derived from the Ray Brook State Tuberculosis Hospital, the Sunmount Veterans Administration Hospital, Will Rogers Memorial and Sanatorium Gabriels. The skills of the research laboratories of the institutions in the area and of the practicing tuberculosis specialists in Saranac Lake will be called upon, as formerly, to participate in the program. There will also be participation by authoritative guest lecturers from different parts of the country. Inasmuch as registration is limited, and applications have already been received for the 1957 session, it is suggested that those who plan to attend make early application for enrollment.

The tuition is \$100, payable to the Trudeau School not later than the opening date, June 3, 1957. A few scholarships are available for those individuals who can qualify.

Postgraduate American Assembly In Fertility And Sterility

The New York Medical College-Metropolitan Medical Center announces the First American Postgraduate Assembly in Fertility and Sterility, to be held in New York City at the College and affiliated hospitals from May 18-31, 1957.

Emphasis in the course will be placed on the clinical aspects of human infertility including recent advances in diagnosis and therapy. A unique feature will be special sessions devoted to methods and problems in the organization and ad-

ministration of sterility clinics, services and teaching programs. The course will be conducted by the Department of Obstetrics and Gynecology, Martin L. Stone, M.D., Director; and is under the supervision of Abner I. Weisman, M.D., Chief, Section of Fertility and Sterility.

The course has been scheduled for the end of May, 1957, so as to allow the registrants the opportunity to attend the annual scientific meetings of the American Society for the Study of Sterility, the Endocrine Society and the American Medical Association, which will be held in New York starting May 31st, 1957.

Information and applications may be obtained from Ralph E. Snyder, M.D., Dean, New York Medical College, 1249 Fifth Avenue, New York 29, New York. Registration is of necessity limited. The tuition is \$150.00.

Postgraduate Symposium On The

Basic Sciences Related To Anesthesiology

University Of Pittsburgh School Of Medicine
Department Of Surgery, Section On Anesthesiology
In Co-operation With The Department Of Anesthesiology Of The

St. Francis, Allegheny General, Mercy, Medical Center Hospitals
June 10-14, 1957, 9:00 a.m. to 6:00 p.m.

Registration Fee — \$25.00

The Course will be limited to 50 participants.

Registration and full particulars should be obtained from: Chairman of the Committee on Graduate Medical Education, University of Pittsburgh School of Medicine, 3941 O'Hara Street, Pittsburgh 13, Pennsylvania.

American College Of Chest Physicians 23rd Annual Meeting

The 23rd Annual Meeting of the American College of Chest Physicians will be held at the Hotel Commodore, New York City, May 29 — June 2, 1957. The scientific program will include prominent speakers on all aspects of heart and lung diseases. In addition to formal presentations, there will be a number of symposia, roundtable luncheon discussions, seminars, and motion pictures.

The Fireside Conferences, which were inaugurated at the annual meeting of the College in 1955, have become more and more popular and will be repeated. At this session, more than 50 experts will be present to lead the discussions on many subjects of current interest in the specialty of diseases of the chest.

Examinations for Fellowship in the College will be held on Thursday, May 30. On Saturday evening, June 1, more than 150 physicians will receive their certificates of Fellowship at the annual Convocation, which will precede the Presidents' Banquet.

American Trudeau Society 52nd Annual Meeting

The 52nd Annual Meeting of the American Trudeau Society, medical section of the National Tuberculosis Association, will be held in Kansas City, Missouri, May 6 to 9, 1957, in conjunction with the Annual Meeting of the National Tuberculosis Association.

In addition to scientific sessions at which papers will be presented on current research, plans are being made for seven special lectures and four panel discussions. Topics for the latter will be tuberculin testing, fungous diseases, tuberculosis case finding, and the surgical approach to the bad chronic case of tuberculosis.

The lectures will be on cor pulmonale, chest injuries, hazards of radiation, tuberculosis in animals, histologic studies in smoking, mucoviscidosis, and diseases of the diaphragm.

Scholarships Worth \$50,000 Established By Upjohn Co.

Undergraduate scholarships worth \$50,000 have been established by The Upjohn Company, Kalamazoo, Mich., for the 1957-58 school year.

Eight four-year scholarships will be given through the National Merit Scholarship Corporation, six of them to students who plan to major in pharmacy, engineering, pre-medicine, or any of the chemical or biological sciences. The other two may be in any field.

National Merit Scholarship Corporation is a non-profit organization which administers a nation-wide scholarship system. Selection of recipients is handled entirely outside of The Upjohn Company through a series of tests and interviews, so winners represent the nation's most gifted students. Each donation is matched by the Corporation from its endowment fund.

Scholarship support on a local basis is also provided in the new Upjohn program. A sum of \$6,000 goes to Kalamazoo College — \$2,000 for the general college fund, and \$4,000 to talented high school graduates in the area. State-supported Western Michigan College receives \$4,000 for scholarships. Designated for science majors, the scholarships will be known as Upjohn Science Scholarships.

New England Obstetrical and Gynecological Society Meeting

Portland, Maine, May 8, 1957

Members of the American Academy of General Practice are invited to attend this meeting — not *all physicians* as indicated in the March issue of the Journal.

A HEALTH FAIR TO BE HELD IN WELLS, MAINE — *Continued from page 139*

PUBLICITY

Posters are to be distributed throughout the County. Newspapers, Churches, Clubs, Radio and Schools will be furnished with information to disseminate. Pamphlets are to be circulated County wide. Radio Stations WIDE, Biddeford; WWNH, Rochester, N.H.; and WHEB, Portsmouth, N.H. will carry spot announcements and feature talks about the Health Fair.

SUMMARY

This paper presents in brief the description of what to expect at the Wells Health Fair and describes the various activities. This includes some of the participants, exhibits and publicity. Admission, tests, X-rays, and literature will all be free. This is a rare opportunity for "Knowledge comes to him who seeks it."

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Meat...

Good Nutrition and the Metabolic Changes of Adolescence

The sharp increase in nutritional requirements during adolescence is ascribed to the rapid growth, restless activity, high basal metabolism, and increased rate of organ development during this period.^{1, 2} Nutrient needs during adolescence are higher than at any other period of life³ except for pregnancy and lactation.

In order to satisfy these extremely high nutritional requirements, "protective" foods supplying liberal amounts of protein, vitamins, and minerals should predominate in adolescent diets.³ Such foods include meat, poultry, fish, milk, eggs, vegetables and fruits, and whole-grain or enriched cereals and enriched bread. Accessory foods commonly eaten by adolescents to satisfy emotional needs may provide energy, but are commonly responsible for obesity and should not take the place of the "protective" foods.

Meat contributes much toward making the daily meals of adolescents appetizing, ample, and satisfying as well as adequate in protein, B vitamins, iron, phosphorus, potassium, and magnesium. Its complete protein functions in all physiologic mechanisms utilizing protein—tissue growth and replacement, fabrication of enzymes, hormones, and antibodies, and maintenance of the body's fluid balance. Its B vitamins and minerals take part in many processes of intermediate metabolism important in body development.

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The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

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Number 5

The Papanicolaou Smear

RICHARD B. STEPHENSON, M.D.*

This brief review of the technique for the Papanicolaou Smear is presented in the belief, first, that invasive cancer of the cervix is today an almost entirely preventable disease, only occasionally curable; and, second, that many physicians are still not making proper use of the cytological smear in cancer prevention.

Cancer of the cervix is second only to cancer of the breast as the most frequent malignant growth in women. In New York State statistics, it is calculated that 3 per cent of all women over 20 will have cancer of the cervix before they die; at the Massachusetts General Hospital, the incidence is about 2 per cent.¹

The signs and symptoms of this disease are few and not very striking. They may be entirely absent, or consist only of vaginal discharge or bleeding. Pain is a late symptom and is generally found only when the disease is hopelessly advanced.

The diagnosis must be made by *examination*, first by a smear, which if properly done will yield up to 90 per cent correct diagnoses;² and then by routine pelvic examination with visual inspection, vaginal-rectal examination and punch biopsy of suspicious areas.

The over-all results of treatment of *invasive* cervical cancer allow little room for complacency, with an absolute cure rate of about 20 per cent and in selected series up to 35 per cent. Results from advanced surgical groups such as Meigs' and Brunschweig's have yielded up to 80 per cent in Stage I and 50 per cent in Stage II. Radiological centers such as Stockholm indicate the optimum results to be expected in Stage I are about 70 per cent and Stage II about 30 per cent.^{1,2,6} These figures simply emphasize that prevention and not treatment is the answer to the control of this disease, since treatment of pre-invasive (in situ) cancers — which are readily detected by cytological smears — is nearly 100 per cent successful.

The use of the vaginal smear as a technique for the detection of cancer has been developed over a period of more than thirty years. The vaginal smear was first used in the study of the sex-cycle of the guinea pig. After discovery of a striking sequence of sharply defined cytological changes in the vaginal fluid of rodents, efforts were made to elaborate a similar series of changes in humans — with mostly negative findings. However, successive phases of the menstrual cycle in women do have their own distinctive, though more

*Mercy Hospital, Portland, Maine



FIGURE I

subtle, changes in cytology. As early as 1923 Papanicolaou in pursuing this systematic study of human vaginal smears had noted and been impressed by the striking abnormalities of exfoliated cancer cells. But it was not until 1939 that the work was undertaken at the Women's Clinic of the New York Hospital, which resulted in the publication of the 1943 monograph on the diagnosis of uterine cancer by the vaginal smear.¹

TECHNIQUE

The technique of taking vaginal smears is very simple, and requires very little equipment.

Materials Needed

1. *Clean* slides, either with frosted ends or provision otherwise made for labelling with the patient's name, the date and the type of smear. Suitable slides, usually with containers, are customarily available from the laboratory that is doing the examinations.

2. For vaginal aspiration — 6-inch glass pipette with rubber bulb.

3. For swab smears — applicators or wooden spatula.

4. For endocervical or endometrial aspiration — a Becton-Dickinson laryngeal or similar cannula and a 10 cc. syringe.

5. A suitable wide-mouth jar or bottle for fixing slides, containing equal amounts of 95 per cent alcohol and ether.

6. Fixing solution of equal parts 95 per cent alcohol and ether.

Procedure

The patient is placed in the usual examination position.

1. For vaginal aspiration smears: With the bulb compressed the pipette is passed into the posterior fornix, and the bulb gradually released as the tip is moved about to get a representative sample. (Fig. 1)

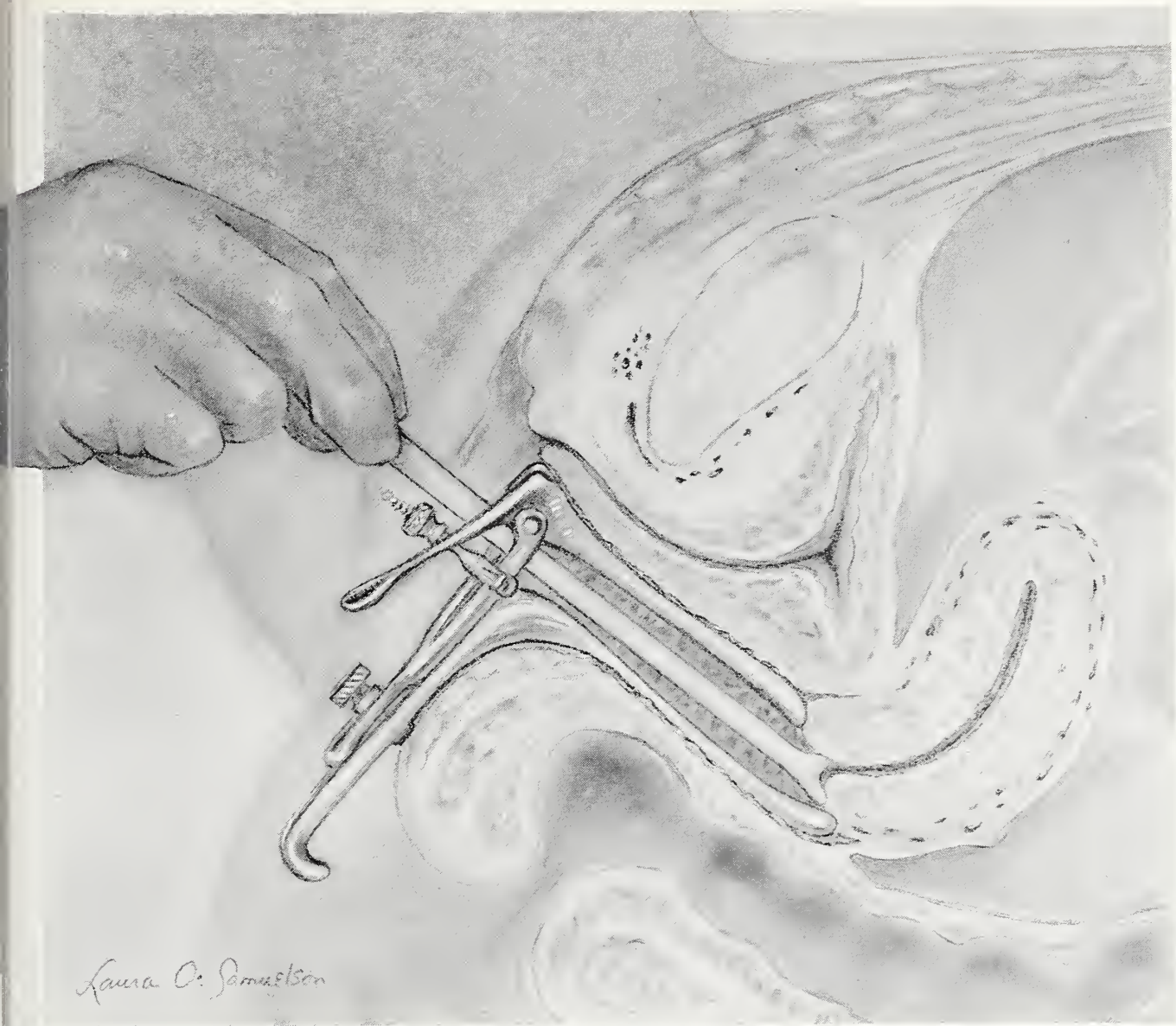


FIGURE II

The pipette is then withdrawn and the aspirate deposited on a slide and smeared, either by drawing a second slide against it, or with the tip of the pipette if the amount is quite small. Slides are then *immediately* placed in fixing solution. (Fig. 3) This technique is particularly suited for clinic use and mass screening surveys, as the time and equipment needed are minimal. However, a much higher percentage of positive findings will be obtained, particularly in early lesions which are not yet in an exudative stage, if a scraping technique is employed.⁵

2. For scraping smears the patient is placed in examining position and the cervix visualized with a vaginal speculum. (Fig. 2) It is important that the speculum is not contaminated with lubricating jelly. The entire circumference of the endocervical junction is then scraped with one or two circular motions of the wooden spatula (the type devised by Ayre and obtainable from all medical supply houses is very convenient for this purpose, but a tongue blade or cotton swab will serve if these are not at hand). The material obtained is then

transferred to the slide with a rotary motion and *immediately* placed in the fixing solution. (Fig. 3)

3. Endocervical and endometrial smears may be obtained by using a laryngeal type cannula and ordinary glass syringe, taking suitable precautions to sterilize the cervix and os, and of course to avoid the pregnant uterus.

4. Studies of the exfoliative cytology of many other organs may also be done, including: sputum, bronchial aspirates, urine, esophageal specimens, gastric aspirates, rectal and colonic washings, pleural, peritoneal and pericardial fluid, breast secretions and other fluids. Many of these require centrifugation or other special handling, and in all, speed of handling up to the point of fixation is essential to prevent cell degeneration. If such studies are desired or contemplated it would be well to work out the details with the pathologist or laboratory which will be examining the specimens.

Precautions

1. The patient should not have douched for at least two hours prior to the examination.



FIGURE III

2. Examination of menstruating patients should be avoided, but one must be certain that he is not dealing with abnormal bleeding.

3. The smear must be taken *before* pelvic examination with a lubricant. The speculum should not be lubricated but merely moistened with water if necessary. Contamination of the smear with lubricant ruins it.

4. The slides should be fixed *immediately* and *not allowed to dry*. If the slides are fixed from one-half to one hour in the ether-alcohol mixture, most laboratories feel that no further treatment is needed for shipping — but some like a drop of glycerin added.

5. Treatment for cancer should *not* be instituted until

confirmation of the diagnosis is made by conventional histological studies of biopsy material.

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Cancer-Cell Seeding Of Operative Wounds

As A Cause Of Failure In The Surgical Treatment Of Cancer

ROBERT R. SMITH, M.D. AND ALBERT W. HILBERG, M.D.*

The universally accepted method of treatment of most carcinomas is directed toward the destruction of the tumor tissue, both at its site of origin and its areas of spread. That this method of treatment frequently fails is attested by the frequency of cancer given as cause of death. This, along with the ever-increasing aging population, makes it apparent that increasing efforts must be made not only on possible preventive means but also on means of increasing the effectiveness of our present therapeutic tools. The ineffectiveness of the present methods of cancer therapy is attested by the low overall survival rate of patients with cancer. In head and neck cancers, exclusive of skin, the usual salvage rate is at best about 40%, and for many intra-oral cancers, the salvage rate is nearer 10%. Breast cancer has an average salvage rate of 20% to 40%. In some clinics successful results of early treatment of breast cancer may run as high as 80%, but as a rule when regional nodes are involved, the usual five-year survival is between 25% and 30%. Treatment of colon and stomach cancer again has equally poor results. When one discusses the ten-year survival figure of any cancer, the "cure rate" is even lower and it becomes evident that possibly our five-year level of determining cure does not present a true picture. Possibly the average cancer becomes disseminated much earlier and more frequently than statistical reports would lead one to believe.

Many articles describe means of selecting or modifying treatment so as to result in better survival rates for a given method of therapy. The important problem would seem to be not the selecting of cases to maintain a high survival rate for a given type of therapy, but rather to learn the reason for failure in the 60% to 70% of the cancer patients who die of their disease. In studying the relatively few reports in which data is available, it is noted how frequently treatment fails because of inability to control the local disease in the area of surgery. Careful and complete followup of cases

is necessary to establish this fact. However, in certain areas, local failure is easier to determine. In the instances of breast and head and neck cancer the local recurrence is readily apparent from frequent recurrence in the area of surgery. In other cancers, such as gastric or colon cancer, the local recurrent disease may not manifest itself until it has time to spread beyond the operative area.

The control of gastric cancer was studied by McNeer, et al,¹ in which survivors of subtotal gastrectomy were followed to autopsy. In 80% of 92 cases cancer was found in the operative area at the time of autopsy. Fifty per cent of the 92 patients had recurrence in the gastric remnant and almost 10% in the duodenal stump. An additional 20% had cancer in the gastric and perigastric nodes. Distant metastases without evidence of local recurrence in the operative site were found in only 15% of this autopsy series.

Numerous studies of head and neck cancer revealed the same local recurrence problems. In the New York Memorial Hospital series, recurrence in the operative area occurred in 44% of over 200 cases.² Beahrs, reporting the Mayo Clinic experience,³ noted 17% recurrence in the operative area and an additional 28% deaths in which the extent of local disease was not known. In a personal series of *en bloc* head and neck resections, the local recurrence rate was 45%.⁴ Edgerton, in a preliminary report of experience at Johns Hopkins Hospital on pharyngeal cancer,⁵ noted at least a 33% local recurrence rate in a study which is still underway and in which local recurrences are increasing. In only one instance, in his experience, were distant metastases found without local recurrence of disease. Wilkins, in a series of carcinoma of the gingiva, noted a 50% local recurrence rate.⁶

Breast cancer is notorious for its high incidence of local recurrence. In fact, the 62% to 75% local recurrence rate after simple mastectomy was the stimulus that lead Halsted to develop the concept of radical mastectomy. Modern day mastectomy still fails in 20% to 30% of instances because of wound recurrences. (See Table 1)

Warren Cole pointed out the importance of local

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recurrent cancer (16%) as a cause of failure in the treatment of colon cancer.¹²

Why does surgery fail? Is it not possible that at least a part of the failure is due to inability to control the local disease?

Table 1. — Incidence of reported local recurrence following radical operation for breast cancer.

Hospital	No. Cases	No. Recurrences	%
Roosevelt (N.Y.) ⁽⁷⁾			
Limited to breast	101	11	10.8
Axilla involved	137	43	31.5
Presbyterian (N.Y.) ⁽⁸⁾			
Limited to breast	237	23	9.7
Axilla involved	385	120	31.3
St. Lukes (N.Y.) ⁽⁹⁾			
Limited to breast	116	8	6.9
Axilla involved	244	52	21.3
Henry Ford (Detroit) ⁽¹⁰⁾			
Limited to breast	97	6	6.1
Axilla involved	149	31	20.8
Johns Hopkins (Balto.) * ⁽¹¹⁾			
Plastic Closure	116	46	39.7
Thiersch Graft	322	97	30.1

*no breakdown as to extent of disease.

One can postulate a number of reasons:

- (1) The cancer is so advanced at the time of definitive surgery that it becomes impossible to remove all of the cancer tissue. Incomplete surgery in which cancer is transected will obviously result in regrowth of the cancer and treatment failure. Early diagnosis does lead to less local recurrence and a better salvage rate. However, early diagnosis is not the only factor in cancer control. Many patients with small cancers and a short history of disease receive early treatment and still develop disseminated disease. On the other hand, the opposite situation also is seen, that is, a long history associated with a large cancer and long survival.
- (2) Treatment will also fail if tumor emboli have spread to other organs and under favorable environment establish themselves but not manifest themselves at the time of definitive surgery. The significance of this cause of failure is receiving more attention recently as demonstrated by the description of tumor cells in circulating blood by Engel, and the interest of surgeons in chemotherapy.
- (3) Treatment will fail also if a new primary cancer develops in the remaining tissue. The question of multiple primary tumor is generally known but not always appreciated. Slaughter's experience in multiple primary intra-oral cancer has emphasized this point.¹³

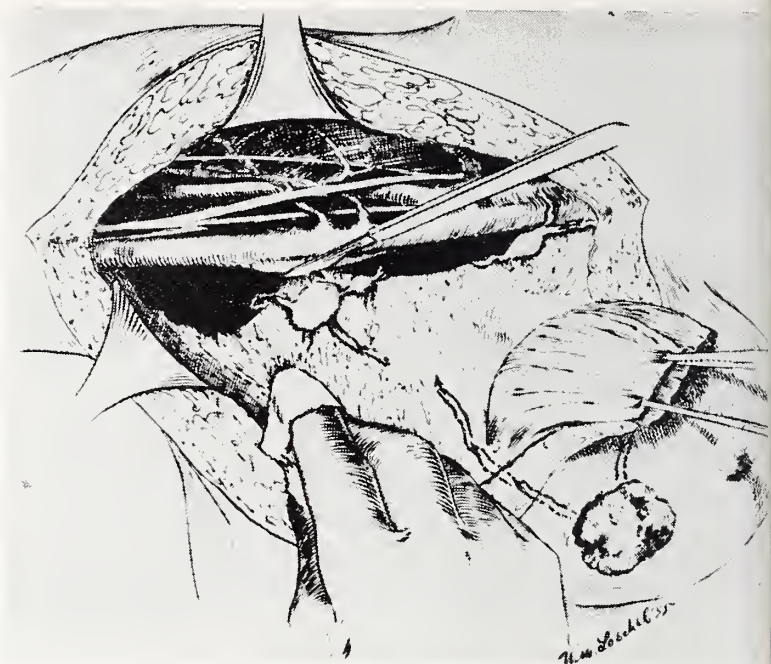


Figure 1. Diagram showing mechanism of contamination of operative wound by tumor cells from transected lymphatics draining cancer lymph node.

He noted an incidence of 11.2% multiple origin site in 783 oral cancer patients. Wilkins⁶ reported that 18% of his gingival cancer patients developed a second primary. About 5% of breast cancer patients can be expected to develop a second primary tumor. In such cases, even though the original cancer is successfully treated, the patients seem doomed to die of cancer unless the entire cancer-target organ can be removed.

(4) The seeded operative wound: The possibility of implanting cancer cells in a wound has long been known. The "contagion" of cancer was discussed in early medical literature. In 1913, Mayo¹⁴ described the traumatic dissemination of cancer by grafting. In 1907 an article appeared with the title of "Cancer Infection and Cancer Recurrence: A Danger to Avoid in Cancer Operations."¹⁵ Cancer cells have been demonstrated on instruments,¹⁶ in wash water, and on the surface of organs. Cancer cell seeding of operative wounds has in the past been recognized by the type of recurrent cancer noted in operative wounds. In cancers with ulcerated surfaces, it is easy to understand how clumps of exfoliated cancer cells can "infect" a wound. This occurs frequently in colon and gastric resections at the site of anastomosis, as well as in most head and neck cancers. In other cancers, for example breast, there are usually no surfaces to exfoliate cancer cells because the entire organ is surrounded by normal tissue. In these cases the line of resection transects lymphatics and blood vessels which drain the tumor area. Any tumor emboli in these vessels can then drain into the wound. (Fig. 1) The manipulation and trauma necessary for the surgical removal of the tumor would help move these emboli through the cut ends of the vessel into the wound.

Three years ago at the Clinical Center, National In-

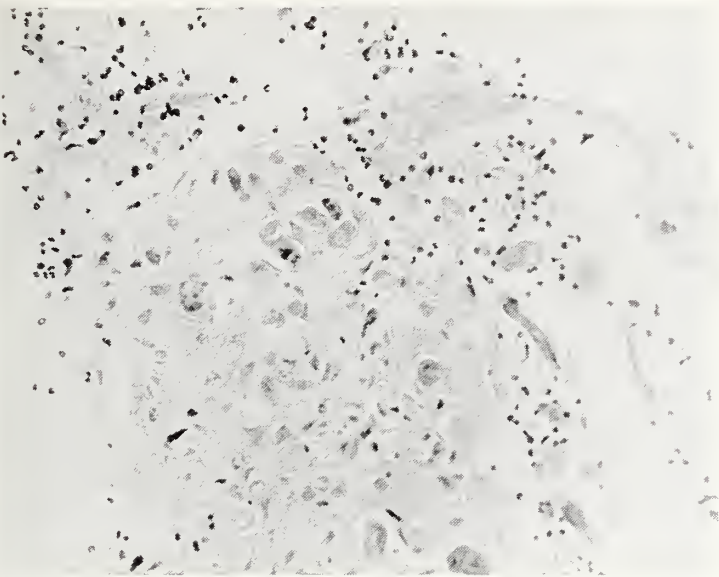


Figure 2. Large fragment of epidermoid carcinoma in washing of pelvic area.

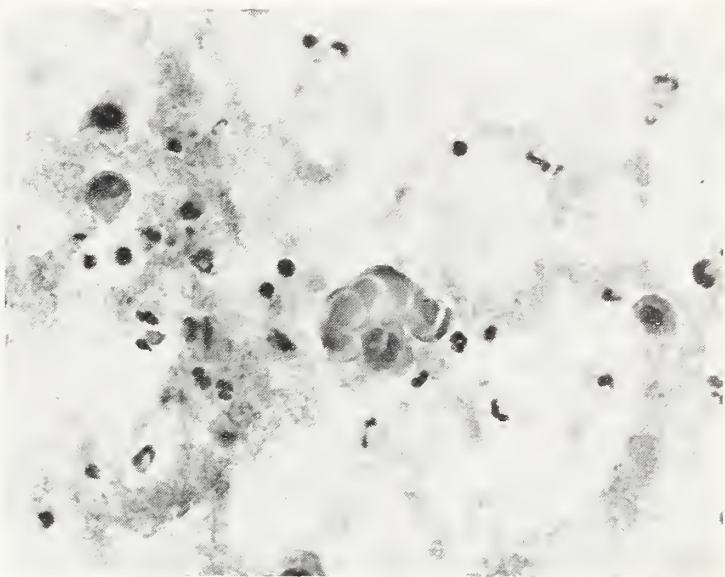


Figure 3. A small fragment of tumor tissue and a few single malignant cells in the wound washing from the area of the left axilla.

stitutes of Health, a study was undertaken to determine how frequently tumor cells could be identified in washings taken from operative wounds. A preliminary report of these findings has been published.¹⁷ In this report, we wish to present further results of these studies.

METHODS

Patients with cancer which by accepted standards were considered operable but by reported end results would have a high incidence of local recurrence were treated by the usual *en bloc* cancer surgery. Just before closure of the skin flaps following the surgical removal of the primary tumor and its lymph node drainage area, the wound is thoroughly washed with sterile physiologic saline solution using a fine spray. The washings are collected in a glass container and mixed as soon as possible with the fixative of 70% or 95% alcohol. The washings are then centrifuged at 2500 r.p.m. Part of the resulting sediment is covered with 10% formalin and the button of fixed sediment embedded in paraffin and sectioned in the routine manner for tissue sections. Another part of the sediment is smeared directly on clean glass slides which are then immersed in a solution of equal parts of 95% alcohol and ethyl ether. After thirty minutes, and while wet, the slides are stained by routine nuclear and cytoplasmic stains. The Papanicolaou staining technique is the standard method used in this laboratory. The slides are screened by tech-

nicians trained to interpret exfoliative cytologic material, and cells or groups of cells to be studied by the pathologist are marked.

Since the efficiency of this test depends upon finding a relatively few cancer cells in a large volume of saline along with blood and any other cells that would be exfoliated or washed off, it is apparent that the possibility of error would be great. Even if all cancer cells could be recognized with ease, the possibility of not being able to wash out all clumps of cells is obvious. These remaining cell clumps could become embedded in a clot, tied into a suture, or enmeshed in and under muscle fibers.

In an effort to test the method and to determine how frequently false positive and/or negative results could be obtained, washings were taken from a number of operations for non-cancerous disease and explorations of cancer patients in which surgery demonstrated inoperability. In such cases, if the method was accurate, washings should be positive in almost 100% of the cancer patients, and in a like manner, negative in non-cancer patients. Forty-two such washings have been taken with results as shown in Table 2.

The one false positive and three false suspicious positive reports were from breast operations. All of these patients had hyperplastic duct areas in biopsy specimens. The three false negatives and four false

Table 2. — Results of wound washings from control patients.

No. of Cases	No. cases reported Positive		No. cases reported Negative		No. cases reported Suspicious	
	True	False	True	False	True	False
	(Cancer Present)	(Cancer not present)	(Cancer not Present)	(Cancer Present)	(Cancer Present)	(Cancer not Present)
	22	1	9	3	4	3

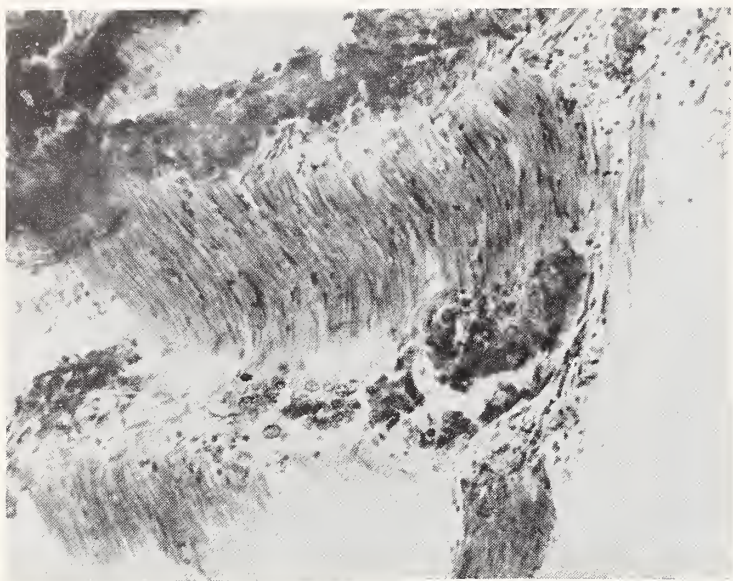


Figure 4. A large fragment of tissue including muscle and invading malignant tumor tissue seen in the wound washing from the area of the maxillary antrum. x 210.

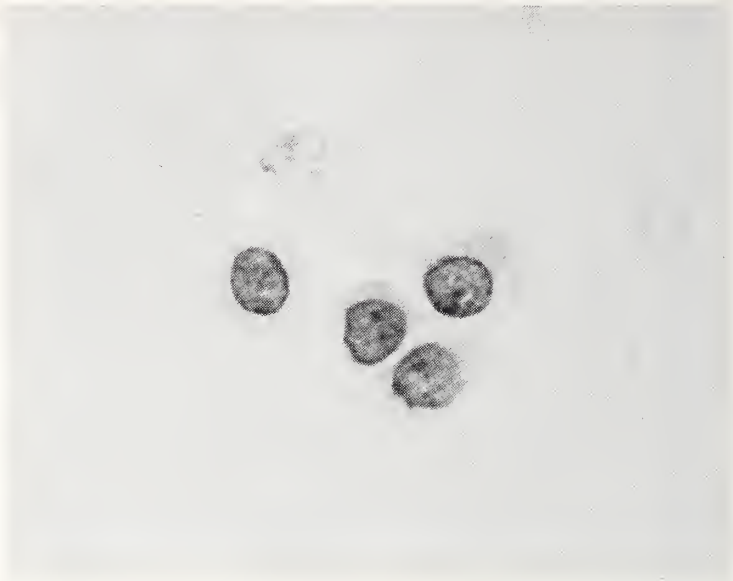


Figure 5. Four malignant cells seen in the wound washing from the area of the left breast.

suspicious reports were from pelvic laparotomy cases with cancer in the operative area. Although the numbers are small, the test was 91% accurate in demonstrating cancer cells when cancer was present.

RESULTS

In the first 113 cases studied, cancer cells were demonstrated in 31 (positive results), and in an additional 16 cases, the cytologist could not be definitely sure as to the nature of the cells and reported the washings as suspicious. In the remaining 66 cases, no tumor cells were found. The breakdown of results as to anatomical site is given in Table 3.

The cytological identification of malignant cells in wound washings did not present too difficult a problem. As noted in Figures 2, 3 and 4, most of the positive washings contained small fragments of tumor tissue which is similar to a small biopsy of cancer tissue. Occasionally the fragments were very large. In one

Table 3. — Results of wound washings obtained from 113 cancer operations.

	Positive	Suspicious	Negative
Head & Neck	14	10	29
Cervix	7	2	18
Breast	2	0	8
Melanoma	3	0	3
Colon & Rectum	1	2	4
Soft Part &			
Bone Sarcoma	2	1	2
Abdominal &			
Chest Wall	1	0	2
Lung	0	1	0
Adrenal	1	0	0
Total cases—113	31 (27%)	16 (14%)	66 (59%)

case the washings revealed a clump of cells which had the appearance of a small biopsy from an epidermoid carcinoma and included epithelial pearl formation, abnormal mitoses, as well as other bizarre tumor cells. (Fig. 2). In other instances only single tumor or very tiny clumps could be identified in the wound washings. (Fig. 5).

The significance of these results is difficult to determine and, in fact, impossible to analyze at this time. Many of the cases have not had sufficient time to manifest their metastases and the numbers are still too small to be of statistical importance. Since these wounds are thoroughly washed with saline, it will be difficult to determine just what the washing alone will do to the incidence of local recurrences. Since these cases are, as a rule, more advanced than the general surgical experience, the failure rate could be expected to be high. More time to allow this study to mature will be necessary before these questions can be answered.

At the present time, 18 of these cases are known to have recurrent cancer. In one case, it was definitely known that cancer was transected at the time of surgery, and in another there is a good possibility that the recurrence was, in fact, a second primary. Three of the patients died within a few weeks of surgery (operative deaths). There are seven known seeded recurrences in the operative area in patients with positive washings, and an additional two recurrences in cases with suspicious washings. There have been recurrences in seven patients whose washings were negative for tumor cells.

It should be noted again that the correlation between the wound washing and the incidence of recurrence in the wound cannot be determined at this time. It is altogether possible that the mere presence of tumor cells in the operative wound is not necessarily a sign that recurrence will develop, and on the other hand, cases in which negative washings were obtained would

not necessarily rule out the possibility of the patient developing locally recurrent cancer. It is possible that factors other than the mere presence of tumor cells in the wound are necessary for the local development of cancer.

An example of a seeded recurrence is well demonstrated in a typical case. This patient had an extensive buccal mucosa cancer with neck node metastases (Fig. 6). Positive washings were obtained from the wound after removal of the primary in continuity with a radical neck dissection (Fig. 7). Because of the extensiveness of the resection, the upper part of the wound could not be closed and was allowed to granulate in. Frequent biopsies were taken from this granulating area. One taken on the tenth postoperative day showed a clump of cancer cells surrounded by granulation tissue (Fig. 8). Numerous other biopsies contained no cancer. It would seem to us that this cancer represented an implant that was most certainly allowed to remain in the wound at the time of surgery.

Another example of implant recurrence was observed in the stump of the vagina in a patient treated by radical hysterectomy for carcinoma of the cervix. The implant was associated with suture material. This same type of spread has been observed in abdominal wounds following colon cancer resection, and in the scar of chest wounds following esophageal cancer resections.

It must be remembered that documentation of wound seeding such as given here is rather fortuitous, and not necessary to establish the principle of a seeded wound. In most cases, and especially in lung and gastrointestinal cancers, the early implant will not be evident, and by the time of exploration or postmortem examination, the disease has usually overgrown or become so disseminated that it is impossible to determine the mode of recurrence.

As stated before, the significance of these results cannot be determined at this time. From the examples given, and the experiences noted by others of accidental transplantation of cancers, such as by skin graft, knife, etc., it is evident that in many cases the surgeon is leaving a contaminated wound, and by this method is causing a number of patients to develop recurrent cancer.

While obtaining more data and allowing it to mature, we have developed in laboratory animals an experimentally seeded wound, using Cloudman melanoma 91, sarcoma 37, K-2 ascites tumor, and V-2 carcinoma. (It is recognized that these tumors may be totally dissimilar to human cancer). Conditions similar to those seen in the operating room have been reproduced. Results are incomplete. The problem of quantitating data from experiments with these transplanted tumors is under way. This experimental system gives a tool to measure results of various wound treatments. To date, formaldehyde shows the best results in preventing tumor inoculum from growing in the experimental



Figure 6. Intra-oral epidermoid carcinoma involving buccal mucosa, alveolus and lateral pharyngeal wall.



Figure 7. A small clump of malignant cells seen in the wound washing after removal of a large fungating epidermoid carcinoma of the oral cavity.

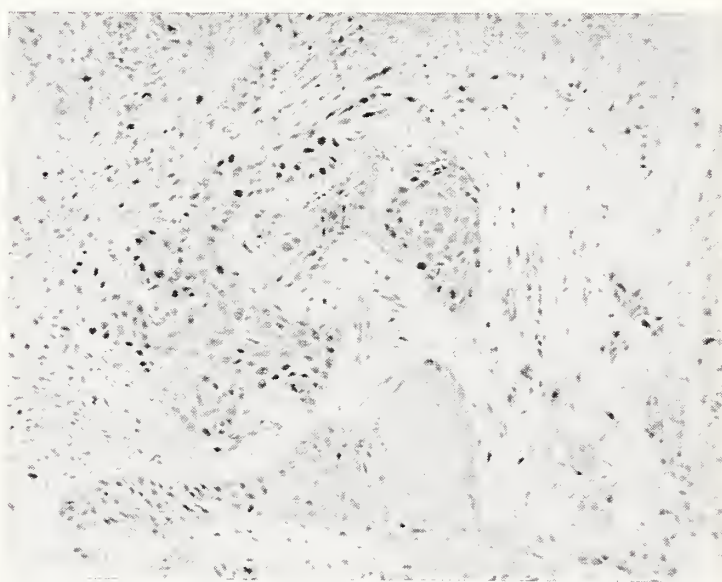


Figure 8. Epidermoid carcinoma in granulation tissue from the healing surgical wound.

wound. Ethyl alcohol, sodium citrate, sodium carbonate, and hypertonic saline all are of value in diminishing the number of implants in the experimental animal.

SUMMARY

This study demonstrates that cancer seeding occurs in at least 27% of cancer surgery, plus an additional 14% if the suspicious cases are included. It is believed that in at least some cases local seeding can be demonstrated as a cause of treatment failure. If effective local chemotherapy can be accomplished at the time of primary surgery, an appreciable increase in our salvage rate should be accomplished. If effective chemotherapeutic agents are discovered which can selectively destroy cancer cells that either become embedded in the wound or break off and are free in the blood or lymph channels, effective cancer therapy will be available.

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Indications For Gastrosocopy

LABAN W. LEITER, M.D.*

When to have a patient gastroscopied cannot be decided by any set criteria. On the one extreme one would gastroscop every patient whose symptoms warrant a gastro-intestinal series, a point of view perhaps just as justifiable as insisting on sigmoidoscopy on every patient who merits a barium enema. In both instances, the one examination complements the other and brings into view areas not well seen by the other. However, the dividends from gastroscopy as a routine procedure in every patient with upper gastro-intestinal symptoms hardly warrants its application in such a routine manner. But never resorting to gastroscopic examination would be comparable to neglecting to do a sigmoidoscopy in a patient with rectal bleeding because the barium enema was negative when an easily visible rectal lesion might be present.

Except for esophageal obstruction, there is no absolute contraindication to gastroscopy. Severe kyphosis can make the examination difficult or unsatisfactory, and

severe debility would be a relative contraindication as it would for any stressful procedure. Esophageal varices are a relative contraindication. Age is not a factor, and indeed my experience has been the same as that reported by Smith and Clifton.¹ They reviewed 259 gastroscopies done in patients 75 years of age or older and observed that elderly patients, as a group, accept endoscopic procedures better than the young, for reasons of being more relaxed and less apprehensive, and often edentulous.

In the event of a suspected esophageal lesion it is possible to combine two procedures: first do an esophagoscopy, and if no lesion is found, follow with gastroscopy. In a reverse fashion, if the gastroscop cannot be passed through the cardia, a situation which suggests to the experienced endoscopist a malignancy, the patient can be immediately esophagoscoped. In this hospital during the past year there have been two such instances; in one case biopsies taken from the lower esophagus were negative but at operation a carcinoma was present in the cardia which was resected. In the

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other, biopsies revealed carcinoma simplex and at surgery the patient was inoperable.

The risks are negligible with flexible gastroscopes; a major hazard is the perforation of the cardia when an obstructive lesion is present. Perhaps the greatest hazard is that of the anesthetic agent. Actually it is possible to do most gastroscopies without any topical anesthesia, relying on adequate pre-operative medication to allay apprehension.

When then should gastroscopy be done? The indications might be roughly classified as follows:

1. Indefinite or equivocal changes in the stomach by x-ray.
2. Evaluation of gastric ulcer.
3. Upper gastro-intestinal bleeding of obscure origin.
4. Hypertrophic gastritis.
5. Persistent upper gastro-intestinal symptoms of probable organic origin even though x-ray studies are negative.
6. Systemic diseases known to be associated with high incidence of gastric lesions.

No one would argue with the need for gastroscopy when x-ray changes are indefinite or equivocal. Two patients gastroscopied at this hospital in the past six months were examined because x-rays were not diagnostic, and in both, gastroscopy revealed carcinoma. In one a biopsy was positive; in the other the biopsy was reported as sub-acute gastritis, but the presence of ulcerations in an area of infiltration, rigidity and lack of distensibility left little doubt as to the presence of malignancy. Both proved to be inoperable cancers at the time of surgery. If those patients had presented themselves to their physicians when symptoms first developed, x-ray studies would presumably have been even less suggestive of any abnormality, but if gastroscopy at that stage could have made the diagnosis, their lesions might have been resectable. The poor five year survival of gastric carcinoma is known to all, and should provoke intensive effort to make an early diagnosis in any patient, especially those over 50 who develop upper gastro-intestinal symptoms of obscure origin. (The two patients mentioned above were 42 and 53 years respectively.)

The overall problem of gastric ulcer is beyond the scope of this paper. Suffice it to say that with combined gastroscopic and radiologic examination the correct evaluation as to benignity versus malignancy can be made in about 95 per cent of cases. Either procedure alone may err in 20 to 30 per cent. Schindler and Desneux² conclude, after a review of 273 cases of gastric ulcer observed gastroscopically, that gastroscopy must be considered an extremely valuable method for the correct differential diagnosis of gastric ulcer. There are many who still feel that all gastric ulcers should be operated upon forthwith, but even for those gastroscopy may provide some helpful information. The five year survival rate of primary lymphomas of the stomach approaches 50 per cent, and as

reported by Allen,³ five year survival is not precluded even with regional nodes and/or resected edge involvement. Accordingly, if the surgeon knows beforehand as a result of positive gastroscopic biopsy that he is dealing with a lymphoma, he will proceed with resection even though the lesion appears unresectable. Certainly if one elects to treat medically a gastric ulcer which appears benign by x-ray, the additional information and increased accuracy attainable from gastroscopy should be of real value.

The third indication, that of obscure bleeding from the upper gastro-intestinal tract, is one where perhaps all too little use of gastroscopy has been made. The routine esophagoscopy and gastroscopy in all patients with active upper gastro-intestinal bleeding as proposed by Palmer⁴ may be a bit radical. But, in any patient where massive or occult upper gastro-intestinal bleeding occurs if x-ray studies are negative or inconclusive, gastroscopy should be done. The list of lesions found in such a situation would include malignancy, benign tumors, benign ulcers, marginal ulcers, gastritis, vascular lesions including gastric varices, venous ectasia, and hereditary hemorrhagic telangiectasia.

The problem of gastritis remains a difficult one and criteria for diagnosis of the various types of gastritis on gross inspection are under scrutiny. Biopsy and microscopic study reveal that the gross appearance may be misleading. However, biopsy is important in the situation where hypertrophic gastritis is diagnosed by x-ray, for some primary lymphomas of the stomach may present this picture. The dictum of Benedict⁵ is apropos, "No gastroscopic examination is complete without biopsy."

The fifth indication is more nebulous. But, as stated above, if gastric cancer is to be diagnosed early enough to improve the five year survival rate, special attention must be paid to the middle aged patient who develops persistent though vague upper gastro-intestinal symptoms. Even those patients who have negative x-rays and little or no weight loss deserve the benefit of gastroscopy.

Finally, gastroscopy should be resorted to more quickly in patients with pernicious anemia because of their known tendency to develop gastric cancer. Halsted⁶ has pointed out that most cases of intestinal polyposis probably have gastric polyposis. In a study of seven cases in one family, five were found to have gastric polyps, and yet four of the five showed no lesions by x-ray because of the small size of the polypi.

In summary, gastroscopy should be considered in any case where seemingly organic symptoms from the upper gastro-intestinal tract have not been adequately or satisfactorily explained by x-ray studies.

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Continued on Page 165

Considerations In Treating Patients With Ureteral Calculi

FREDERICK B. CLARK, M.D.*

The responsibility for the diagnosis and treatment of ureteral calculi most often falls to the general practitioner. Which cases should be referred to the urologist? Since most stones pass spontaneously, the decision arises infrequently. It amounts essentially to determining when surgical intervention is indicated. In most instances the treatment is straightforward, in others complicating factors must be considered.

The size of the calculus is a prime consideration. In general, calculi smaller than .50 cm. in diameter will usually pass spontaneously whereas those 1.0 cm. and larger in diameter usually require removal by open operation. Those between .50 cm. and 1.0 cm. must be followed closely and therapy decided after consideration of all factors. Patients who have passed many calculi will pass larger calculi subsequently because of gradual dilation of the ureter. In some instances a small, irregular calculus in a small ureter will fail to move after a long period and will require surgical intervention. The size of the calculus in relation to the size of the ureter is an important factor.

The state of renal function as influenced by obstruction is a most important consideration. Here, the value of intravenous pyelography must be stressed. A period of watchful waiting may be pursued if there is but little hydroureter and hydronephrosis above the stone as revealed by the pyelogram. A common finding within the first hour after dye injection is a nephrogram with a calcification in the course of the ureter on the affected side. In this situation the contrast medium is present in the cells of the renal tubules and casts a denser renal shadow. It is not, as often stated, a non-functioning kidney. It is necessary to take films subsequently at hourly or two-hourly intervals, and frequently the contrast medium will become concentrated enough in the renal pelvis and ureter to reveal hydronephrosis and hydroureter down to the calcification in the ureter. In this way the diagnosis and functional status of the kidney are confirmed and cystoscopy and retrograde pyelography are avoided.

If the stone is small, expectant treatment again is indicated since the kidney and ureter will completely recover from moderate uncomplicated obstruction as soon as it has been relieved. If the ureter and renal

pelvis are not visualized, retrograde pyelography is probably necessary.

Visualization of the urinary tract is indicated in all patients with ureteral colic, even if the calculus is passed and recovered or is assumed to have passed because of the cessation of pain and hematuria. The calculus can become impacted and obstruct the ureter causing asymptomatic progressive destruction of the kidney by hydronephrotic atrophy. Acceptable proof that the calculus is passed can be obtained only by visualization of the urinary tract by pyelography. The importance of this proof cannot be stressed too strongly. Pyelography is also important because many other pathologic conditions of the urinary tract will masquerade under the guise of "ureteral colic" and hematuria. These conditions include: renal, ureteral and bladder neoplasms; acquired and congenital obstructions of various types; and congenital anomalies. Urinary stasis and infection are important factors in the etiology of calculus formations. Many serious urinary tract lesions are discovered during pyelography on patients with calculi.

The patient who has had several attacks of severe colic over a period of several days requires relief. Small calculi in the lower one-third of the ureter may be extracted by endoscopic manipulation. By inserting a ureteral catheter by the obstructing stone and decompressing the ureter above it, the improved ureteral contractions will often expel the calculus.

Infection, as manifested by chills, fever and pyuria occurring with ureteral colic, makes the removal of a ureteral calculus a surgical emergency. Such patients should be promptly hospitalized for emergency treatment. The combination of obstruction and infection rapidly produces permanent damage to the renal parenchyma as well as flooding the blood stream with bacteria-laden urine through the mechanism of pyelovenous backflow.

There are a few other unusual instances where ureteral calculi are self-evident emergencies. These include anuria in the presence of bilateral ureteral calculi or calculi in the ureter from a solitary kidney.

The excruciating acute paroxysms of ureteral colic are among the severest pains that a human being experiences. The patient and his family consider the severity of the pain proportional to the seriousness of the disease and are truly terrified, frequently considering death to be imminent. Because of this fact, re-

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assurance becomes an extremely important part of the treatment. After reassurance, the patient will frequently tolerate the pain better. In regard to pain relief, we believe the most satisfactory agent to be morphine. Because the ureter is an autonomous organ, parasympathetic blocking agents are of little value in pain relief. The value of atropine lies in its ability to augment the action of morphine and not have any direct effect on the ureter.

SUMMARY

Several factors in the diagnosis and treatment of

ureteral calculi have been considered. The use of intravenous pyelography to confirm the diagnosis, to determine the functional status of the kidney, and later as proof that the calculus has passed, has been discussed. The necessity for emergency treatment of an obstructing calculus in the presence of infection has been stressed. The most important factors determining the need for surgical intervention are the degree of obstruction, the size of the calculus in relation to the size of the ureter, and the progress of the stone as observed by x-ray.

Clinico-Pathological Conference

Mercy Hospital—May, 1956

HISTORY

This 42-year-old female patient was admitted on 2-29-56 because of prolonged and severe vaginal bleeding. Multiple cervical biopsies had revealed chronic cervicitis and a dilatation and curettage performed a year before had shown an atypical hyperplasia of the endometrium. Although she had temporary improvement following these diagnostic procedures, she began to spot between periods in February of 1956. During the week prior to admission she had bled profusely with clots but without pain.

Physical examination showed her skin to be pale, moist and warm. There were no demonstrable petechiae. The pharynx and ears were clear. Minimal arteriosclerosis was observed in the ocular fundi with-

out hemorrhages or exudate. The neck revealed no stiffness nor masses. The trachea was in the mid-line. The thyroid was not palpable. There were no palpable masses in the breasts. The lungs were clear to auscultation and percussion. The heart was not enlarged. The rate was 88 per minute with regular rhythm. There were no murmurs. Blood pressure was 130/80 mm.Hg. Abdominal examination disclosed a large, hard, non-tender mass in the left side of the abdomen extending downward into the pelvis. The liver edge could not be palpated. There was no edema of the extremities. Vessel pulsations of the extremities appeared normal. There were no masses palpated on rectal examination. The neurological examination was normal.

LABORATORY FINDINGS

Date	RBC	Hb.	Hct.	WBC	Polys	Eos.	Myelocytes	Lymphs	Nucleated Reds
2-29-56	4.44	57	—	10.3	53	2	2	35	8
3- 3-56	3.80	58	15	—	—	—	—	—	14
3- 8-56	—	34	—	—	—	—	—	—	—
3-14-56	—	48	—	25.7	57	—	6	21	16

On 3-3-56 the platelet count was 150,000 per cu.mm. Repeated smears showed an apparent decrease in the number of platelets. The Coombs Test was negative on 3-14-56. X-Ray studies revealed a large, soft tissue density occupying the entire left upper and lateral abdomen. An intravenous pyelogram showed normal renal function with no evidence of any obstructive lesion on either side. The pelves and calyces were adequately and well outlined, although there was some

distortion in the outline of the left kidney. There was no elongation of the calyces and the well-outlined denser kidney shadow was seen to be distant from the large soft tissue tumor mass in the left flank. (Fig. 6). Also demonstrated radiologically were innumerable calculi in the gall bladder, calcifications interpreted as calcified abdominal lymph nodes overlying the right fifth lumbar transverse process and upper right portion of the sacrum. The bony structures generally had a peculiar

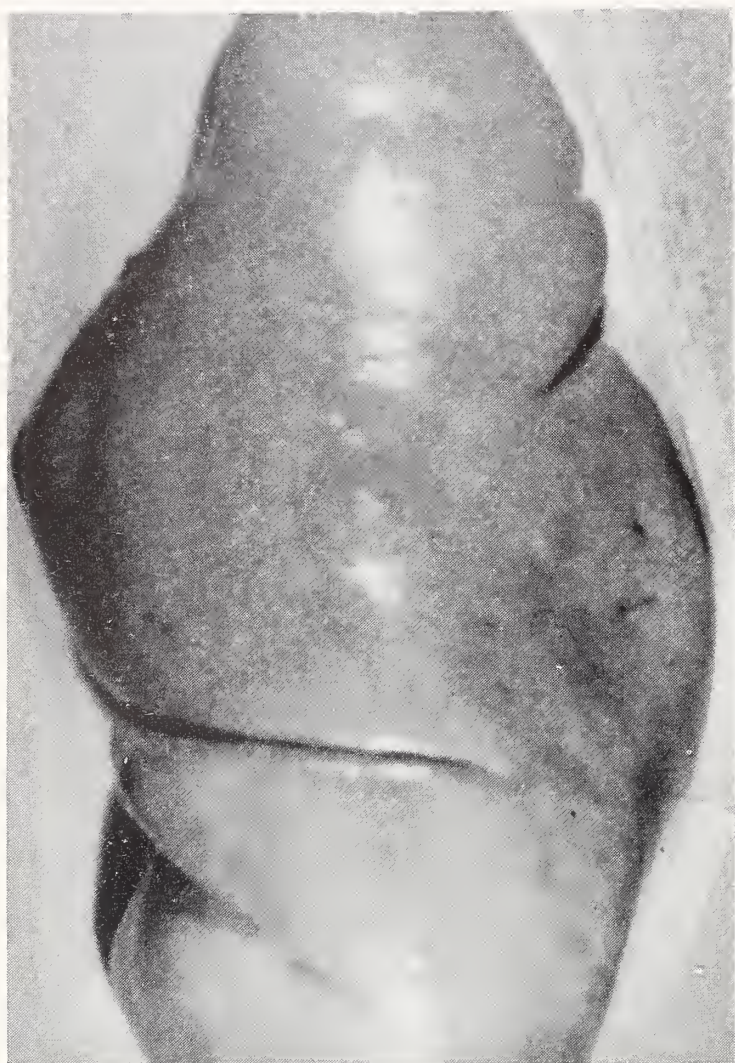


Figure 1. Enlarged spleen.



Figure 2. Dense vertebral bone.

ground-glass appearance with an increased density and some loss of their normal architectural outline. These changes were somewhat pagetoid in nature.

On 3-10-56 the patient was started on Cortisone and was transfused with packed red blood cells. The patient became jaundiced. When the cross-matching was re-checked there was no evidence of incompatibility. The patient was given numerous transfusions with packed red cells, but went down hill and expired quite suddenly on 3-16-56.

DISCUSSION

Charles R. Glassmire, M.D., Physician, Maine Medical Center and Mercy Hospital.

This was a patient who was admitted to the hospital because of prolonged and heavy vaginal bleeding, who showed essentially nothing on physical examination except a large spleen and whose lab work revealed a rather marked hypochromic anemia with immature red cells in the circulating blood. Bone films showed an increase in density with some loss of their normal architectural outline. Despite blood transfusions, Cortisone and other supportive therapy, she developed jaundice and other hemorrhagic phenomena and expired. In discussing a case such as this, there are many approaches which might be used. However, the in-

formation presented in this protocol is somewhat scanty and I think probably the most logical approach to the discussion would be to consider the causes of splenomegaly and anemia. Basically, the splenomegalies may be divided into five different groups: The infectious splenomegalies, the congestive splenomegalies, the hyperplastic splenomegalies, the infiltrative splenomegalies and the neoplastic splenomegalies. Infectious splenomegalies may be further divided in acute and chronic; and the acute group would include such things as septicemia, abscess of the spleen, infectious mononucleosis, subacute bacterial endocarditis, etc. There is nothing about this patient which would indicate an infectious process which might be responsible for her developing splenomegaly. The protocol does not indicate that she has developed any fever and her white blood count has been essentially normal until terminally. The chronic splenomegalies would include such things as tuberculosis, syphilis, Banti's Syndrome, malaria and other allied tropical diseases, and the controversial group of conditions such as Boeck's sarcoid and Hodgkin's disease which some authors put in the infectious group. These latter two might be considered elsewhere, but for purposes of discussion, they might just as well be considered here. Tuberculosis can never be ruled out as the cause of splenomegaly. One finding of calcified ab-



Figure 3. Large trabeculae and fibrous tissue replacing vertebral marrow. Very few blood-forming cells remain.

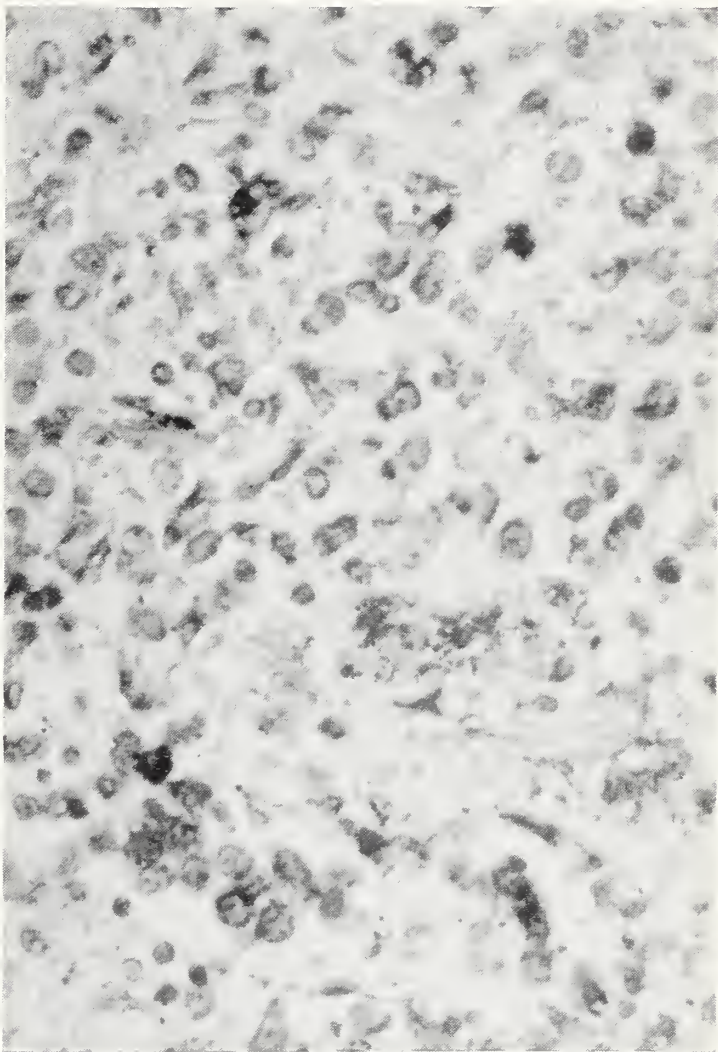


Figure 4. Immature blood-forming cells in sinuses of spleen.

dominal lymph nodes might possibly suggest this diagnosis, but I am told that a chest x-ray was normal. If this spleen were enlarged to this extent because of tuberculosis, I would expect to find calcification in the spleen. Nowhere in the protocol are we told that the patient's serology was negative, but it would be extremely unusual to find a case of splenomegaly of this magnitude from Lues without having other stigma of syphilis. I have been assured that the patient has not been in the tropics and, therefore, all of the various tropical diseases which might produce a spleen of this size can be eliminated. Hodgkin's disease can never be ruled out as a cause of splenomegaly — since it is well known that this condition may involve the spleen primarily — but I do not believe that a single organ involvement with Hodgkin's disease such as would be necessary in this instance would produce the blood picture that we find in this case. Hodgkin's disease might be the cause of the patient's difficulties if we were to find bone marrow involved with Hodgkin's as well, but this basically would place it within another category, which we will discuss at a later time.

Boeck's sarcoid would be much more apt to show an enlarged liver along with an enlarged spleen and one would expect to find changes in the patient's lungs.

Here again, however, we have a disease with extremely variable manifestations and one cannot completely eliminate this as the cause for this patient's trouble.

The congestive splenomegalies include such things as cirrhosis of the liver, thrombosis of either the portal vein or the splenic vein or the rare instances of heart failure which lead to this eventual outcome. Here again if cirrhosis of the liver were to account for this amount of enlargement of the spleen and anemia, one would definitely expect to find the liver palpable unless the liver had already gone through the congestive failures and was now sufficiently fibrotic to produce a small non-palpable liver. If this were the case, however, one would expect the patient to be jaundiced from the beginning and one would expect to find more evidences of portal hypertension. These same thoughts would undoubtedly rule out the conditions of thrombosis of the portal or splenic veins as well.

We are told that the patient had a normal sized heart and there were no murmurs present. Her blood pressure was within normal limits on admission and her lungs were clear. These findings would undoubtedly rule out this degree of splenomegaly on the basis of congestive heart failure.

Most of the infiltrative splenomegalies, such as

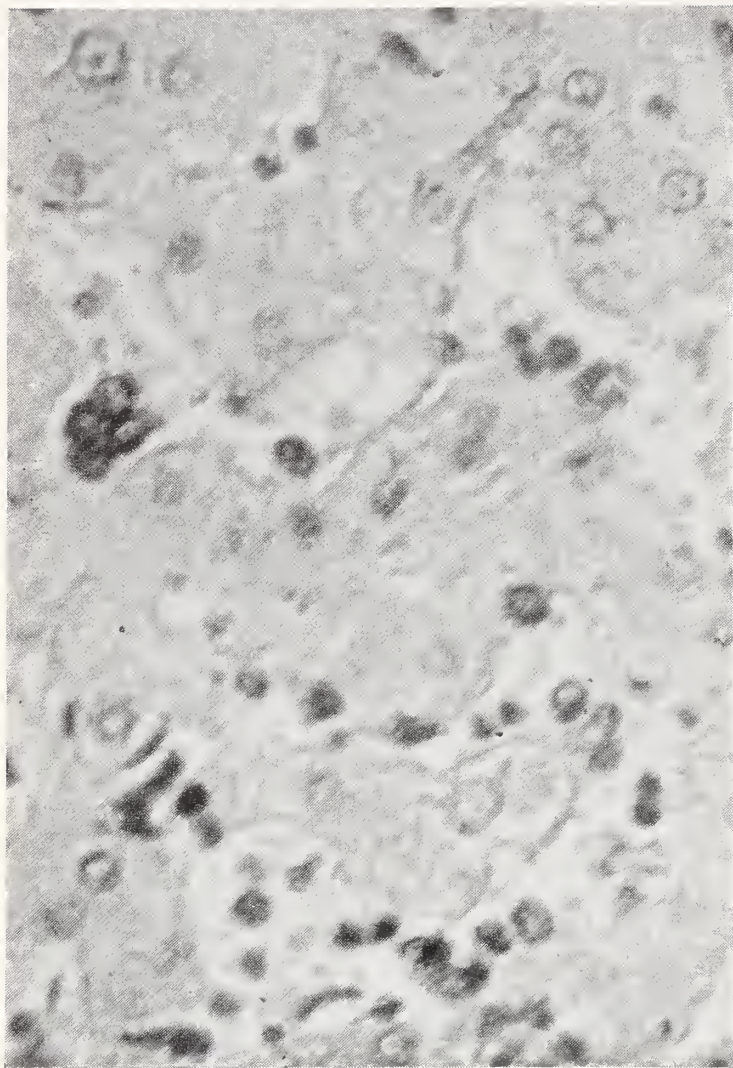


Figure 5. Clumps of dark cells in hepatic sinusoids are blood-forming cells.

Gaucher's disease, Hand-Schuller-Christian disease etc. are primarily conditions which are first found in childhood. We have nothing in the protocol to indicate that this patient has been chronically ill since childhood, and I think that these may legitimately be excluded from the discussion at this time.

Primary amyloidosis may never be ruled out, but primary amyloidosis involving the spleen would be somewhat unusual without finding of difficulty in the patient's heart, skin or tongue. Since there is no evidence of any severely debilitating chronic disease, I believe that secondary amyloidosis may also be excluded. Benign cysts of the spleen might cause a spleen of this size, but it should not give the blood picture that we find in this case. One cannot completely rule out benign or malignant tumors of the spleen or metastatic tumors involving the spleen, but we have no indication from the patient's course that there was any focus of a primary malignancy, which would produce enlarged spleen. I think, therefore, we may legitimately rule out four of the causes of splenomegaly and consider primarily the hyperplastic group as the possible etiological agent in this patient's illness.

Under the hyperplastic splenomegalies, one must consider hemolytic anemia, the chronic anemias, purpura

hemorrhagica, Graham's disease or benign hyperplasia of the spleen, the leukemias, polycythemia and primary spleno-neutropenia. Primary spleno-neutropenia may be immediately ruled out, I feel, on the basis of the normal red counts without any evidence of depression. Polycythemia very certainly should not be considered here as we have no evidence of any increased red cells in the peripheral blood and certainly no increase in the hematocrit. The white cell count does not completely eliminate the diagnosis of leukemia as one can have an aleukemic phase, but in a spleen of this size it would be extremely unusual to find leukemia as the etiological agent without finding a rather marked increase in the circulating white blood cells. Purpura hemorrhagica does not appear to be the difficulty in this patient, as she had not had very marked bleeding tendency until terminally. She has no marked decrease in her platelet count, although additional laboratory work would be of interest to eliminate this possibility. The hemolytic anemias may be responsible for this degree of splenomegaly, but I cannot bring myself to make a diagnosis of hemolytic anemia in a patient who has not had previous episodes or evidence of hemolytic crises with jaundice.

It seems we have eliminated most of the causes of splenomegaly, except for the chronic anemias. These basically include pernicious anemia, thalassemia, and the myelophthitic anemias. I am assured that this patient is not of Mediterranean ancestry and there is certainly no evidence of a hyperchromic anemia in this instance, so I feel we are left primarily with the so-called myelophthitic anemia to explain this patient's entire picture. The term myelophthitic anemia is applied to the type of anemia associated with space-occupying disorders of the bone marrow. This condition is characterized by the presence of immature white cells in the circulating blood as well as large numbers of nucleated red cells quite out of proportion to the degree of anemia at times, and this anemia has sometimes been referred to as leukoerythroblastic anemia. The common cause of this type of anemia is metastatic cancer in the bone marrow. Malignancy of the breast, prostate, lungs, adrenals and thyroid are most apt to produce this type of anemia, but multiple myeloma and a rare disorder of myelosclerosis or osteopathia condensans disseminata has been known to give this picture. Hodgkin's disease by infiltration of the bone marrow, as mentioned previously, may give rise to the picture of a myelophthitic anemia as may some of the other primary xanthomatoses. Still other cases fall into the category of agnogenic myeloid metaplasia. As the name implies there is no known etiology of this condition. Bone is variably fibrotic, hyperplastic, aplastic or normal — but never leukemic. In general the marrow is unusually fibrotic and the x-ray appearance of the bones is quite characteristic as is shown in this instance. The spleen microscopically shows marked myeloid metaplasia and myeloid metaplasia may be

found also in the liver, lymph nodes and elsewhere. The findings in this patient of an enlarged spleen, large numbers of nucleated red cells in the peripheral blood, with a moderate number of young white cells in the peripheral blood, coupled with the x-ray appearance of this patient's bones and the absence of any apparent etiological factor, makes me select for a diagnosis in this instance agnogenic myeloid metaplasia. I believe, as indicated in the protocol, that the patient's terminal episode was a cerebral hemorrhage to explain her death.

Gerald C. Leary, M.D., Pathologist, Mercy and Webber Hospital

Dr. Glassmire is to be commended for a very orderly and complete discussion of this case. A condensed report of the post mortem findings will now be reviewed.

The body was that of a well developed, moderately obese white female approximately 42 years of age, weighing about 170 lbs. and measuring 5'6" in length. There were no masses in the breast. The skin was very pale. There were two small scars over the sternum, the site of previous bone marrow punctures. Some fluid blood and blood clot was present in the vagina. The spleen was markedly enlarged. It weighed 1653 gms. It extended down to the left iliac crest. On section, the spleen was moderately firm and dark red in color. The liver was enlarged. It weighed 2452 gms. The capsule was smooth. The cut surface had a dark brown normal appearance. The gallbladder was filled with green stones. The extrahepatic biliary tract was patent. The portal and splenic veins contained no thrombi. The pericardial cavity contained approximately 10 cc. of clear yellow fluid. The heart weighed 300 gms. The measurements of the heart valves and the thickness of the myocardium were normal. The valves were smooth and delicate. The coronary vessels were soft and pliable. No thrombi were found. The pulmonary artery examined in situ contained no ante mortem thrombi. There was no free fluid in the pleural cavities. The lungs were negative.

Kidneys: Right kidney 210 gms. Left kidney 240 gms. The capsules were smooth. They stripped easily to reveal smooth surfaces. The cortico-medullary markings were distinct. The only abnormality noted was marked pallor of the cortices of both kidneys. The pelves and calices were not dilated. The ureters were normal. There were numerous mucous cysts of the cervix. The endometrium was thin and covered by blood clot. There were numerous fibroids of the myometrium measuring up to 3 cm. in greatest diameter. The tubes and ovaries were negative. The bones of the sternum, ribs and vertebrae were sectioned and the usual normal marrow cavities were replaced by very dense sclerotic bone of ivory consistency. The superficial lymph nodes and the abdominal and mediastinal lymph nodes were not enlarged.

On microscopic examination, the following were

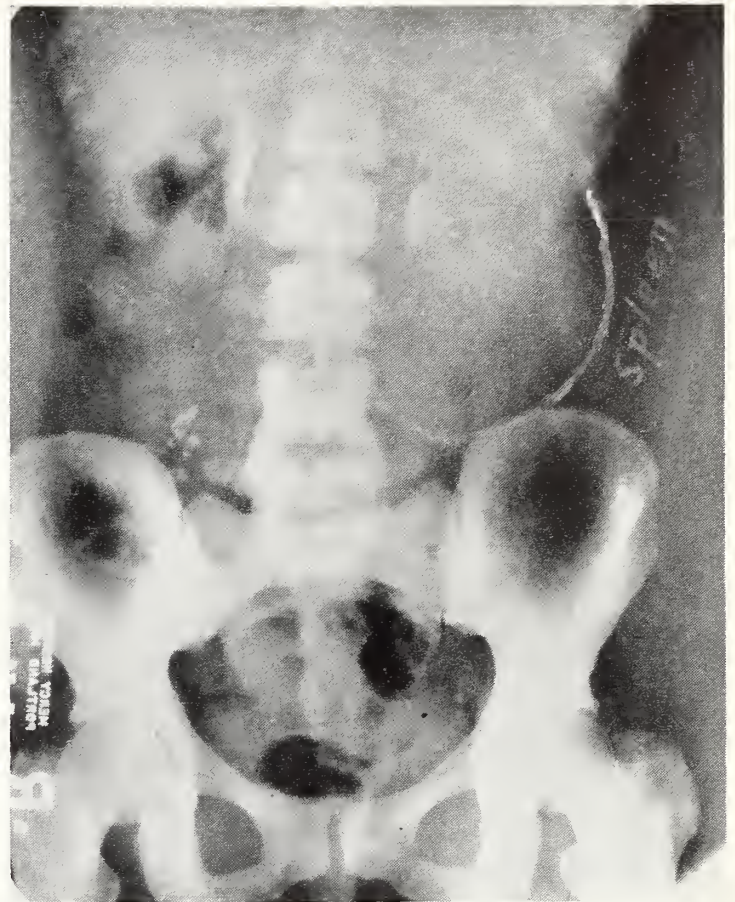


Figure 6. Enlarged spleen outlined. Note density of bone and gallstones.

the most important findings: The liver showed extensive extramedullary hematopoiesis. The spleen also showed similar hematopoiesis. Scattered throughout the splenic pulp were numerous macrophages filled with hemosiderin. The capillaries of the kidneys showed the presence of immature blood-forming cells, chiefly immature red blood cells. Numerous sections of the vertebral, sternal and rib bones showed extensive replacement of the marrow cavities by very large bony trabeculae, between which was fibrous tissue containing a few blood-forming cells. However, there was marked encroachment upon the blood-forming cells by the marked overgrowth of dense bone. The endometrium was normal. The cervix showed considerable dilatation of the glands, but there was no evidence of malignancy. Evidently the bleeding from the uterus was on the basis of thrombocytopenia.

Brain: On gross examination the convolutions were not flattened. The sulci were of normal depth. The coronal sections of the brain at 1 cm. intervals disclosed no evidence of hemorrhage. The blood vessels at the base of the brain were soft and pliable. No thrombi or emboli were found in the vessels. There was no evidence of arteriosclerosis.

The pathologic diagnoses were as follows:

Hepatomegaly and splenomegaly due to extensive extramedullary hematopoiesis.

Generalized osteosclerosis.

Continued on Page 165

SPECIAL ARTICLE

The Unmet Needs Of Medicine In Maine

The Bingham Associates Fund is directed towards "the Advancement of Medicine." It was conceived twenty-five years ago by the late William Bingham, 2nd, and its professional activities were developed at first by Mr. Bingham's medical friends and advisers, Doctors John G. Gehring, Joseph H. Pratt and George B. Farnsworth, all deceased, and at the same time by his friend and consulting physician Dr. Samuel Proger, now President of the Bingham Associates Fund.

Shortly thereafter in the development of the Fund's program, Sidney W. Davidson, Esq., of the New York bar and of Sebec Lake, Maine, began his major and continuing part. To this end, Mr. Davidson was early appointed by Mr. Bingham as his trustee to administer his Charitable Funds. Through Mr. Davidson there also came about a valued advisory role for Mr. Bingham's interests on the part of the late Joseph Barr of New York and after him, by Harold U. Johnson of New York. Mr. Barr was a Trustee of the Bingham Associates Fund and Mr. Johnson succeeded him in this capacity.

Through these years Mr. Bingham was cared for professionally by Dr. Arthur L. Walters of Miami Beach, Florida. Mr. Bingham and Dr. Walters became friends, and over the years of association Dr. Walters was given a major responsibility for the activities of the Bingham Associates Fund.

After Mr. Bingham's death, it was decided to enlarge the trusteeship of the Bingham Associates Fund to include Mr. Bingham's sisters, the Honorable Frances P. Bolton of Cleveland and Washington, D. C., and Mrs. Dudley Blossom of Cleveland and Palm Beach. Mr. Bingham's nephew, Harry Payne Bingham, Jr., of New York, also became a trustee of the Bingham Associates Fund. At the same time Mr. Jean Mauze, a friend of the Bingham family and advisor, was appointed a trustee to the Bingham Associates Fund. Mr. Mauze is vice-president of the United States Trust Company in New York. Also Mr. Ralph Lowell of Boston was named a Bingham trustee. Mr. Lowell is president of the Boston Safe Deposit and Trust Company and has been prominently active in various responsibilities for medical affairs in New England.

William Bingham, 2nd, who died in 1955, was a kindly and generous resident of Bethel, Maine, and a truly remarkable man. He became interested originally in the problem of doctors in rural practice in Maine and philanthropically supported the Bingham Associates

Program which has enabled the important postgraduate education liaison and consultative services between regional medical centers and communities. Its multiple services have included among others, clinical pathology, radiology, guest speakers, and the introduction and initial subsidy of needed specialists and the rotation of house officers.

In addition to the development of the community medical facilities in Maine, Mr. Bingham was the primary philanthropist for the effective growth of the New England Center Hospital in Boston, and were it not for his modesty, the Hospital would rightfully bear his name for it is surely his.

The Bingham Associates Program, in its present form, thus consists of the voluntary working association among thirty-five affiliated hospitals in Maine and fourteen in Massachusetts with the New England Center Hospital which is the Program's base hospital and a teaching auspice of the Tufts University School of Medicine.

The particular tradition of the Bingham Associates Program has been a steadfast concern for the regional development of the educational activities among physicians, nurses, medical technologists and other auxiliary health personnel. The need for continued improvement of the Center Hospital is directed by this goal. This established objective of the Program for the region is achieved by the axis which links the activities of the base hospital to those of each community hospital. The needs of the practicing physician and his community hospital have been kept in the foreground, and the Program has endeavored to improve regional medical care with emphasis upon those activities which are clinically useful.

In 1945 the Rockefeller Foundation made a grant to the Bingham Associates Fund which enabled the Fund to extend its educational and service affiliation to certain hospitals in Massachusetts, located principally in the western section of the State. In the ensuing ten years the Foundation gave substantial annual support to this successful regional development with the subsidy ending in 1954. Fourteen affiliated community hospitals constitute the basis for the Massachusetts Associates.

Soon after completion of the Rockefeller support, Dr. John Grant of the Foundation wisely proposed that some type of evaluation be made of the Bingham activities. This led to a grant-in-aid by the Foundation for a study of the medical scene where the Bingham Program had operated throughout, namely the State of Maine. The timing of this was especially fitting,

*Reprinted from the preface of "The Unmet Medical Needs of Rural People in the State of Maine."

in that just ten years prior, Dr. Jean A. Curran, then Dean and President of the Long Island College of Medicine, independently had made a survey of the Bingham Program at the request of its own Trustees.

The 1956 grant from the Rockefeller Foundation led to the appointment of Dr. Wilson G. Smillie, Professor Emeritus of Preventive Medicine at Cornell University Medical College, who conducted the Survey in association with Dr. Curran. The Survey was terminated by their well-planned Labor Day Symposium at Surry, Maine, on *The Unmet Needs of Medicine in Maine*.

On behalf of the Trustees of the Bingham Associates Fund, I wish to thank Dr. Smillie, Dr. Curran and the Rockefeller Foundation for the important contribution they have made to the Bingham Associates Program.

George W. Dana, M.D.
Medical Director
Bingham Associates Fund

The New England Center Hospital
Boston 11, Massachusetts
December 31, 1956

INDICATIONS FOR GASTROSCOPY — *Continued from Page 157*

Diagnosis in 273 Gastric Ulcers. *Gastroenterology* 24: 328-338, 1953.

3. Allen, Arthur W., Donaldson, Gordon, Sniffin, Ronald C. and Goodale, Fairfield. Primary Malignant and Lymphoma of the Gastro-intestinal Tract, *Ann Surg.* 140: 428-438, September 1954.

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Approach to Severe Upper Gastro-intestinal Hemorrhage. *Ann. Int. Med.* 36: 1484-1492, 1952.

5. Benedict, Edward B. Endoscopy (Medical Progress) *Endoscopy NEJM* 19 252: 809-813, 1955.

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CLINICO-PATHOLOGICAL CONFERENCE — *Continued from Page 163*

Extramedullary hematopoiesis in the kidneys.
Chronic cholecystitis with cholelithiasis.
Multiple leiomyomata of myometrium.
Cystic dilatation of cervical glands.
Immediate cause of death: Probably the result of marked anemia.
This is a rare type of disease. The variable picture has led to many names and interpretations of the disease — if it is one disease. Some authors believe it to be a variant of leukemia. One of the chief proponents

of this etiology is Dr. Custer. Others suggest that the condition may be a chronic bone marrow failure following intoxication from toxic chemicals.
-After the autopsy the family of this patient was closely questioned for the possibility of exposure to any of the known drugs which may result in fibrosis or sclerosis of the bone marrow. No history of such an exposure could be elicited. Two bone marrow aspirations had been attempted but no marrow could be aspirated.

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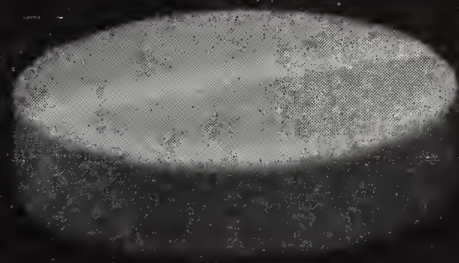
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The Journal of the Maine Medical Association

DANIEL F. HANLEY, M.D., Brunswick, Editor

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Across The Desk

A.M.A. Plans Outstanding Medical Meeting in June

Physicians attending the A.M.A.'s 106th annual meeting in New York City, June 3-7, will find a star-studded revue of exhibits, scientific lectures, medical films, and color television programs lined up for their pleasure and enlightenment. Approximately 18,000 physicians from all over the country are expected to participate in this world-famous "short course" in postgraduate medical education.

Focal point of the scientific program will be the Coliseum — New York's new exhibition hall — with four floors devoted to technical and scientific exhibits, many of the scientific meetings, and the color television program. A number of section meetings plus the scientific film program will be held in hotels near the exhibit hall. Headquarters for the House of Delegates will be the Waldorf-Astoria.

New Booklet Tells How to Get Surplus Gratis

Just published by the Department of Health, Education and Welfare is a revised booklet on acquisition of Federal surplus property. Hospitals, professional schools, civil defense organizations and other tax-supported or non-profit institutions should have this 26-page guide to eligibility for donable real and personal property. Its contents has been revised to conform to amendment of the law last year which made civil defense agencies eligible for gifts, as well as health and educational institutions. State by state di-

rectories of surplus property and civil defense headquarters account for much of the booklet's text.

In the 1955-56 fiscal year, \$204.5 million in government surplus was distributed among the states. Allocations in the current year, which will end on June 30, will exceed \$250 million at the present rate. Bills are pending in Congress to extend eligibility to 4-H clubs, recreational agencies and other enterprises.

Pamphlet's price from the Government Printing Office is 15 cents.

Earned Income of Doctors Affected by Tax Ruling

Physicians and dentists 65 and older who are still in private practice are affected by a ruling (57-141) published last week by the Internal Revenue Service. In essence, it minimizes the importance of equipment — however costly or complex — as a factor in producing

income and disallows operational expenses in computation of earned income. Section 37 of the Internal Revenue Code of 1954 is involved. This gives the formula for ceiling on retirement income (pensions, dividends, rents, etc.).

Medicare HQ Seeks Help on Paperwork Re-Forms

Major General Paul I. Robinson, executive director of the Office of Dependents' Medical Care — known for short as Medicare — is soliciting suggestions for revision of the DA Form 1863, entitled "Statement of Services Provided by Civilian Sources." This claim form is used by both physicians and hospitals. The probability is that it will be split into two, or even three,

forms. General Robinson is inviting ideas on content, format and number of forms to be used. He hopes to have the new paper ready for distribution by the close of this year, and he has set May 15 as the deadline for receipt of suggestions. His office is in the Old Main Navy Building, Washington 25, D. C.

General Robinson Outlines Progress in Medicare Program

Progress of the Dependent Medical Care Program, now three months old, and some of the trends that are developing in it have been outlined to A.M.A. representatives by military officials. Present at the reviewing session were Dr. Edwin S. Hamilton, chairman of the special trustees' committee on Medicare; two committee members Drs. Hugh Hussey and James Reuling; Dr. Joseph McCarthy, chairman of the Council on Medical Service; and a number of A.M.A. staff representatives from Chicago and Washington. Presenting the information for the Army were General Paul I. Robinson, head of the Office of Dependent Medical Care, and members of his staff. Some of the major points were as follows:

1. States will be asked to extend their contracts from July 1, 1957, until they have been renegotiated next year, five per month.

2. Army dependents make up 25.5% of the doctor claims, Navy 30.1%, Air Force 41.7% and PHS 2.7%.

3. All state medical societies are participating, with two exceptions: Rhode Island, where the Army is paying doctors directly, and Ohio, where the Army has contracted with an insurance company to handle the physicians' Medicare.
- (A report on the current status of Medicare will be published shortly by headquarters of A.M.A.)

Emotional Disorders in Medicare are Clarified

Through the issuance of a clarifying directive, Medicare headquarters has taken steps to cut down on hospital admissions, as "acute emergencies," of persons suffering from emotional disorders.

Hospital bills for such admissions will be paid only if the attending physician states a genuine emergency existed and if the duration of hospitalization is not in excess of 21 days.

Is Medicare Abused?

The executive director, Office for Dependents' Medical Care, reported that there had been almost no apparent evidence of overcharging or abuse by physicians, or of fraud on the part of dependents. He indicated

that he was delighted with the cooperation he had received from the American Medical Association, the constituent associations and the fiscal agents. Moreover he had absolutely no criticism regarding quality of care.

Wells Health Fair a Success

Attendance	1143	Polio vaccine given to	51
Chest X-rays	603	children	
Urines	254	Blood typed	627
Positive urines for sugar	8	Blood pressures	
Blood sugars done	7	Normal	353
Urines showing albumin	2	Abnormal	108

Cost of Medical Care in the U. S.

When the various parts that go into the Nation's health bill each year are added up, the total is staggering. Estimates of private and public spending include the cost of everything from patent medicine and toothpaste to surgeon's fees. Private care for the country in 1955 was placed at \$11.2 billion, while public care

(federal, state and local) was estimated at \$3.9 billion. The following figures for private care costs are for 1955.
 \$3.4 billion for physicians' charges.
 \$3.7 billion for hospital charges.
 \$2.3 billion for charges for drugs and appliances.
 \$1.8 billion for other charges, including nursing, etc.

Health and Medical Resources

The medical "plant" that provides the country with the finest care of any nation is equally impressive when viewed statistically. In one area, that of medical school graduates, bare statistics fail to tell the whole story. They do not, for instance, reflect the increased utilization of physicians' skills and the advance of medical knowledge in treatment of patients.

225,579 physicians in U. S. in January 1956.

1,604,000 hospital beds in U. S. in 1955.
 430,000 professional nurses in 1955.
 300,000 practical nurses, attendants, nurses' aids in 1955.
 4,735 medical school graduates in 1930.
 5,275 medical school graduates in 1940.
 6,135 medical school graduates in 1950.
 6,845 medical school graduates in 1956.

Rising Cost of Medical Care

In the consumer price index for February, medical care hit a new peak, 13.5, and retained its first place spot ahead of food, housing, transportation and other

essentials. The over-all price index was 118.7 (1947-1949=100).

Voluntary Health Insurance

Another development of great importance in the furnishing of medical care has been the growth of voluntary health insurance. Twenty years ago the number of persons covered by some form of health insurance was only 1.5 million. When the drive was on for compulsory health insurance in 1949, just over 50 million persons were covered by voluntary insurance. Organized medicine contended then that voluntary coverage would expand, thus obviating the need for governmental insurance. The figures below prove this was a good estimate of the situation.

110,000,000 persons now covered for hospital charges.
 92,000,000 persons now covered for physicians' charges for surgery.
 55,000,000 persons now covered for physicians' medical charges in hospitals.
 10,000,000 persons now covered for physicians' home and office call charges.
 10,000,000 persons now covered for major medical expenses (catastrophic) compared with 1,200,000 covered in 1953.

Defense Department Prepares Doctor Amendment to Draft Act

The Defense Department, preparing for the expiration of the special doctor draft act next June 30, is moving ahead with legislation to amend the regular draft act so that physicians may be called up selectively. The bill is now before the Budget Bureau, which is expected to clear it soon for presentation to Capitol Hill.

The proposed amendment would in effect waive the Selective Service Act's prohibition against discrimination to the extent that physicians, dentists and allied scientists could be called up by their professional classifica-

tion. Thus these men, because they are in the particular professional groups, would be subject to special calls and not necessarily inducted in the same order as others in their same age group.

One phase of the situation that is causing some concern in the medical profession is the possibility that June 30 will see the end not only of the special doctor draft act, but also the expiration of the National Advisory Committee to Selective Service (the Rusk committee) and its affiliated volunteer state and lo-

cal committees. The Defense Department Amendment setting up the new doctor procurement mechanism under the regular draft has no provision for continuing the committee. Selective Service had not recommended retaining the committee.

The national, state and local committees, made up of physicians and dentists, have been the liason between the military services and Selective Service on the one hand and the medical professions and medical schools on the other.

Labor Medical Leaders Map Course in Conflict

Differences between organized medicine and labor health programs in various parts of the country are intensifying. In Washington, a special conference was held behind closed doors at AFL-CIO headquarters. Participants were administrators of labor-sponsored clinics, gathered to map strategy for use in several Eastern and Midwestern states where local medical societies are challenging their operations. The meeting was called by Dr. Morris Brand of the Sidney Hillman Medical Center in New York.

The United Mine Workers medical program continues to have its conflicts (especially in Pennsylvania and Illinois) but its professional staff people received front office orders to decline Dr. Brand's invitation.

Note: A statement on the conference's results was unobtainable, ostensibly because of reluctance to disclose what labor medicine may be planning to defend its interests in this waxing fight over free choice of physician, billing procedures and miscellaneous issues.

Medical groups at odds with labor may find cause to gloat over the embarrassment inflicted on unions in general by recent Beck disclosures. However, this would have no more relevance or justification than criticism of A.M.A. because it invited the teamster leader to address an annual meeting in Atlantic City some years ago and for some time thereafter publicized widely his sentiments against national health insurance.

Sectarian Fight Gains on Grants to Hospitals

Baptist groups are making their influence felt on the issue of Federal subsidization of church-operated hospitals. At Congressional hearings, two House members expressed themselves emphatically against a Hill-Burton Act which offers outright grants to help build non-profit hospitals but denies loan assistance to sponsors

who would prefer to pay back government money. A third Congressman introduced a new bill on the subject. And in the meantime, Senate and House members alike were receiving letters and telegrams branding subsidies to denominational hospitals as an undesirable church-state liaison.

Comparison of the Bills

Bill (HR. 6329), sponsored by Representative John J. Riley (D., S.C.), amends the Hill-Burton Act so as to permit the Public Health Service to make loans, instead of grants, upon request. Interest ceiling is $3\frac{1}{2}\%$ and amortization would be over a 25-year period. The Hill-Kerr Bill (S. 1681), amends the Hill-Burton Act by making 40-year loans available at an interest rate corresponding to that paid by long term government securities. It extends the program's life five more years.

HR. 1979, sponsored by Representative William R. Poage (D., Texas), authorizes the Department of Health, Education and Welfare to make loans for construction or improvement of nonprofit hospitals. The interest rate shall be "not more than 3 per centum and not less than the applicable going Federal rate," the bill says. (It is not clear as to what happens when the "going Federal rate" is more than 3%).



DEAN H. FISHER, M.D.
COMMISSIONER

State of Maine
Department of Health and Welfare

Aid To Disabled Program Reflects Changes*

December, 1955 — December, 1956

The experience of a complete calendar year with the relatively new program of Aid to the Disabled indicates some interesting changes in characteristics of particular interest to physicians. The first detailed article on this program which appeared in the February, 1956 issue of the Journal was based on a study of only 385 cases, whereas the information presented herewith is based on information regarding 791 recipients.

AGE AND SEX

In December, 1955 the proportion of males to fe-

*Statistical data for this article was prepared by Vance G. Springer, Director of the Department's Division of Research and Statistics, from information compiled by the Medical Review Team.

males was two to one. By December, 1956 the proportion of females had increased by five per cent to 38.4 per cent.

As shown in Table I, in 1956 there was a larger proportion of recipients under age 35 and age 55 and over than in 1955.

TABLE I

Age group	1956		1955	
	Number	%	Number	%
Under 35	100	12.6	47	12.2
35 - 44	130	16.4	71	18.4
45 - 54	206	26.0	108	28.1
55 - 64	355	45.0	159	41.3

TABLE II

	December 1956		December 1955	
	Number	Per Cent	Number	Per Cent
Total	791	100.0	385	100.0
Tuberculosis (all forms including arrested tuberculosis)	25	3.2	15	3.9
Other infective and parasitic diseases (including late effects)	47	5.9	31	8.0
Malignant neoplasms	23	2.9	10	2.6
Mental deficiency	91	11.5	21	5.5
Cerebral spastic infantile paralysis	46	5.8	18	4.7
Cerebral accidents	71	9.0	34	8.8
Other diseases of the nervous system and sense organs	82	10.4	53	13.8
Circulatory diseases other than diseases of the heart	21	2.7	7	1.8
Diseases of the heart	139	17.6	70	18.2
Diseases of the respiratory system	40	5.1	13	3.4
Arthritis	106	13.4	51	13.2
Deformities, malformations and diseases of the musculoskeletal system	42	5.3	28	7.3
Injuries	22	2.8	13	3.4
All other diagnoses	36	4.5	21	5.5

TABLE III

Age and Sex of Recipients, by Major Impairment, December, 1956

Major Impairment	Grand Total	Male					Female				
		Total	Under 35	35-44	45-54	55-64	Total	Under 35	35-44	45-54	55-64
Total	791	488	53	79	135	221	303	47	51	71	134
Arrested tuberculosis	17	12	2	2	5	3	5	2	2		1
Other tuberculosis	8	5		2	1	2	3	1	2		
Syphilis and its sequelae	10	7		2	1	4	3		1	1	1
Late effects of poliomyelitis	32	17	2	2	7	6	15	2	3	7	3
Late effects of encephalitis	3	1				1	2	1	1		
Neoplasms	23	12	1	1	1	9	11	1		3	7
Diabetes	10	5	1	1	1	2	5				5
Other allergies, endocrine system, Metabolic and nutritional disorders	10	5		1	3	1	5	1	1	3	
Anemia	2	1				1	1		1		
Mental deficiency	91	34	14	12	5	3	57	16	18	12	11
Multiple sclerosis	21	14	1	7	2	4	7		4	1	2
Other inflammatory diseases of central nervous system	5	2			1	1	3			3	3
Paralysis agitans	18	10		3	5	2	8		1	2	5
Cerebral spastic infantile paralysis	46	25	13	8	2	2	21	8	3	4	6
Cerebral paralysis	71	50	1	5	14	30	21	1	1	8	11
Epilepsy	20	9	5	1	3		11	5	3	1	2
Other diseases of central nervous system	17	10	1	3	4	2	7	2	3	1	1
Chronic rheumatic heart disease	15	9		3	2	4	6			3	3
Arteriosclerotic heart disease	79	63		2	13	48	16		1	1	14
Chronic endocarditis and other myocardial degeneration	6	4			1	3	2				2
Other heart diseases	7	6		1	3	2	1				1
Hypertension with heart disease	32	17		1	4	12	15			1	14
Hypertension without mention of heart	5	2			1	1	3		1	1	1
Other diseases of arteries	11	9	1		3	5	2		1		1
Diseases of veins and other diseases of circulatory system	5	4		1		3	1				1
Diseases of respiratory system	40	36	2	1	12	21	4				4
Diseases of digestive system	7	6		1		5	1	1			
Diseases of genito-urinary system	4	2			2		2			1	1
Arthritis	106	62	1	7	23	31	44	1	2	12	29
Deformities	8	7		1	3	3	1				1
Osteomyelitis and other diseases of musculoskeletal system	17	13	5	3	2	3	4	1		3	
Congenital malformations	17	9	2	3	3	1	8	4		2	2
Symptoms, senility and ill defined conditions	3	2		1	1		1				1
Injuries resulting in paralysis	22	15	1	4	4	6	7		2	1	4
All other	3	3			3		0				

MAJOR IMPAIRMENT OF RECIPIENTS

The major change in the primary diagnosis of recipients between 1955 and 1956 was mental deficiency. As shown in table II, the number of cases in this diagnostic classification rose from 21 to 91. In 1955 cases of mental deficiency made up only 5.5 per cent of the caseload. In 1956 this group accounted for 11.5 per cent of all the disabled. Liberalization of the definition of mental deficiency was a factor in this increase.

Decreases of two per cent or more occurred in other infective and parasitic diseases, other diseases of the nervous system and sense organs, and deformities, malformations and diseases of the musculoskeletal system.

These decreases are apparently due to the fact that in the first nine months of the program persons with paralytic polio, multiple sclerosis, deformities and congenital malformations received priority. Between 1955 and 1956 the number of cases of multiple sclerosis remained unchanged, late effects of polio increased by only 10 cases, and deformities, congenital malformations and diseases of the musculoskeletal system increased by 14 cases.

To some extent changes in the diagnostic classification between 1955 and 1956 are due to changes in the original diagnosis as well as to better classification of disability through the efforts of the Medical Review Team.

TABLE IV
Mobility status of recipients by sex and age.
December, 1956

Mobility Status	All Recipients		Male					Female				
	Number	%	Total	Under 35	35-44	45-54	55-64	Total	Under 35	35-44	45-54	55-64
Total recipients	791	100.0	488	53	79	135	221	303	47	51	71	134
Housebound	328	41.5	135	15	23	37	60	193	28	26	51	88
Bedridden	74	9.4	35	3	6	9	17	39	7	6	11	15
Chairfast	125	15.8	65	9	17	17	22	60	6	9	20	25
Other	129	16.3	35	3	0	11	21	94	15	11	20	48
Capable of activity outside home or usual residence	463	58.5	353	38	56	98	161	110	19	25	20	46
With help of another person	19	2.4	4	1	1	1	1	15	3	4	3	5
With help of device	58	7.3	47	3	8	12	24	11	1	2	3	5
By self	386	48.8	302	34	47	85	136	84	15	19	14	36

TABLE V
Living arrangements of recipients, by sex and age
December, 1956

Living Arrangements	All Recipients		Male					Female				
	Number	%	Total	Under 35	35-44	45-54	55-64	Total	Under 35	35-44	45-54	55-64
Total number of recipients	791	100.0	488	53	79	135	221	303	47	51	71	134
Per cent	100.0	—	61.7	6.7	10.0	17.1	27.9	38.3	5.9	6.5	9.0	16.9
In own establishment	340	43.0	259	4	30	74	151	81	1	9	22	49
Alone	63	8.0	34	1	2	12	19	29	0	2	9	18
With one or more related persons												
Spouse present	248	31.4	215	3	28	59	125	33	1	6	11	15
Spouse not present	29	3.6	10	0	0	3	7	19	0	1	2	16
With non-related person only	11	1.4	5	0	0	2	3	6	0	1	1	4
In home of son, daughter or parent	186	23.5	85	37	25	17	6	101	36	25	18	22
In other relative's home	96	12.1	51	6	9	19	17	45	6	7	14	18
In non-relative's home	56	7.1	29	3	5	5	16	27	2	3	2	20
In hotel or rooming house	8	1.0	7	0	1	1	5	1	0	0	0	1
In boarding home	16	2.0	11	0	3	3	5	5	0	1	0	4
In institution	78	9.9	41	3	6	14	18	37	2	5	14	16
Nursing or convalescent home	60	7.6	31	3	3	10	15	29	1	4	12	12
In hospital	16	2.0	8	0	3	2	3	8	1	1	2	4
Other institution	2	0.3	2	0	0	2	0	0	0	0	0	0

MOBILITY STATUS

Changes in the mobility status of recipients of Aid to the Disabled between 1955 and 1956 are due in large part to the increase in the number of cases with mental deficiency. The proportion who are housebound increased from 38.2 per cent to 41.5 per cent. Of this group the proportion who were bedridden decreased from 12.0 per cent to 9.4 per cent and the proportion who are chairfast decreased from 17.9 per cent to 15.8 per cent. Persons neither bedridden or chairfast but confined to the house increased from 8.3 per cent to 16.3 per cent. A large part of this increase probably represents those cases with mental deficiency who must be kept indoors under close supervision. About 64

per cent of the women are reported as housebound compared to only 28 per cent of the men. Nearly three out of five recipients (58.5 per cent) are capable of activity outside the home or usual residence. A little more than two per cent get about with the help of another person, 7.3 get about with the help of a device and the remaining 48.8 per cent are able to move about by themselves.

LIVING ARRANGEMENTS OF RECIPIENTS

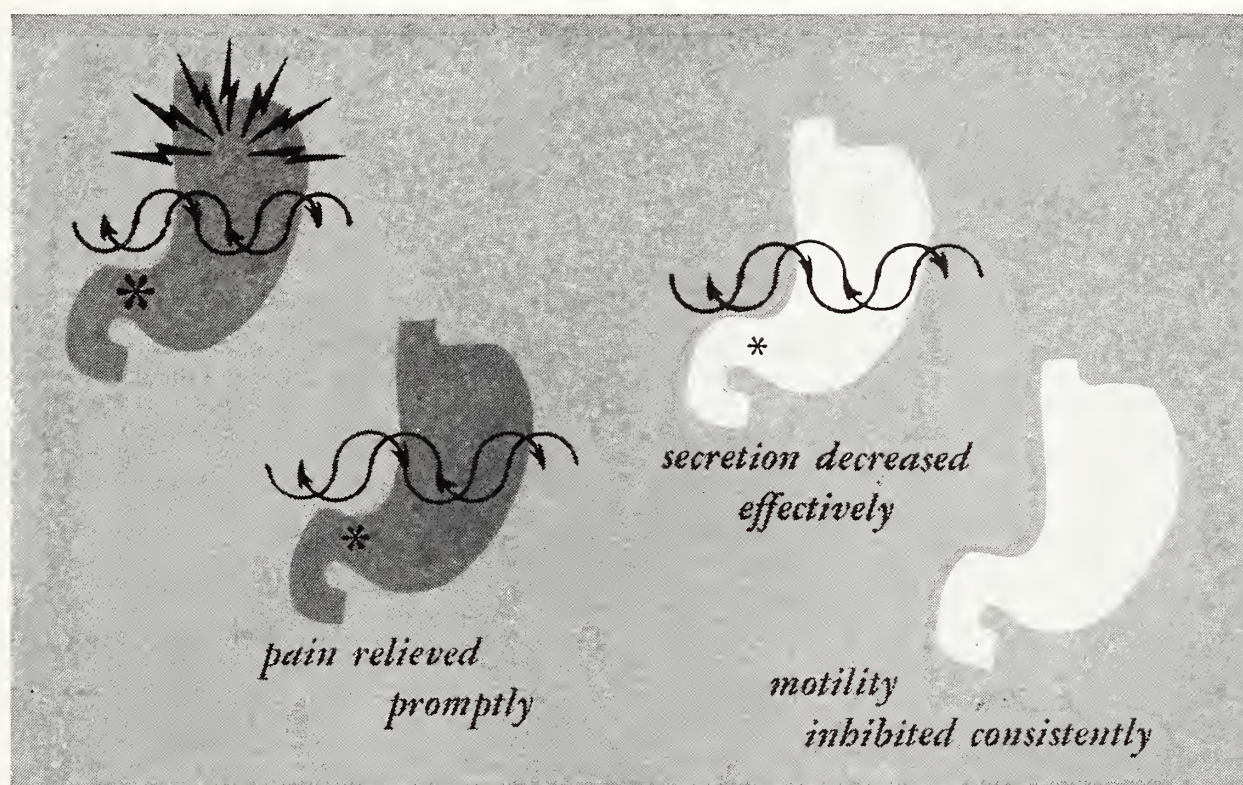
More than two out of five recipients (43 per cent) are living in their own establishment. Eight per cent live alone. For 31.4 per cent the spouse is in the home, while for 3.6 per cent a person or persons other than

Continued on page 176

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Among the many clinical indications for Pro-Banthine (brand of propantheline bromide), peptic ulcer is foremost. During treatment, Pro-Banthine has been shown repeatedly to be a singularly valuable agent when used in conjunction with diet, antacids, sedation and psychotherapy as required. Lichstein and his associates* report that Pro-Banthine "proved almost invariably effective in the relief of ulcer pain, in depressing gastric secretory volume and in inhibiting gastrointestinal motility. The

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*Lichstein, J.; Morehouse, M. G., and Osmon, K. L.: Pro-Banthine in the Treatment of Peptic Ulcer. A Clinical Evaluation with Gastric Secretory, Motility and Gastroscopic Studies. Report of 60 cases, Am. J. M. Sc. 232:156 (Aug.) 1956.

SEARLE

AID TO DISABLED PROGRAM — Continued from Page 174

TABLE VI
Family status of recipients, by sex and age
December, 1956

Family Status	All Recipients		Male					Female				
	Number	%	Total	Under 35	35-44	45-54	55-64	Total	Under 35	35-44	45-54	55-64
Total	791	100.0	488	53	79	135	221	303	47	51	71	134
No spouse or children under 18	524	66.2	267	50	51	68	98	257	45	42	54	116
Spouse only	95	12.0	67	0	2	11	54	28	0	3	11	14
One or more children under 18, no spouse	7	0.9	3	0	0	2	1	4	0	2	1	1
One child under 18	3	0.4	1	0	0	1	0	2	0	1	0	1
Two children under 18	1	0.1	1	0	0	0	1	0	0	0	0	0
Three or more children under 18	3	0.4	1	0	0	1	0	2	0	1	1	0
Spouse and one or more children under 18	165	20.9	151	3	26	54	68	14	2	4	5	3
One child under 18	39	5.0	33	0	0	11	22	6	0	1	3	2
Two children under 18	38	4.8	31	1	6	8	16	7	2	2	2	1
Three or more children under 18	88	11.1	87	2	20	35	30	1	0	1	0	0

the spouse are living in the home of the recipients. Nearly a fourth (23.5 per cent) of the disabled are living at home with the parents or are living in the home of children. About 12 per cent are with other relatives, 9 per cent are with non-related persons or in boarding homes. About 10 per cent are in institutions, usually nursing homes. Two per cent are in hospitals.

FAMILY STATUS

About two out of three recipients have no spouse or children under 18. Twelve per cent have a spouse, but no children under 18. More than a fifth of the recipients have a spouse and one or more children under age 18.

Harvard Graduate Students Pay Annual Maine Visit

Following an annual custom, a group of physicians from foreign countries, who are doing graduate work in Maternal and Child Health at the Harvard University School of Public Health, visited Maine the first week in April as a part of their field training.

The group visited Washington County and also spent a day and a half in the administrative offices in Augusta, observing the Maine program. The Commissioner, Dr. Dean H. Fisher, greeted the visitors whose trip to Maine was arranged by Dr. Ella Langer, Director of the Division of Maternal and Child Health in the Maine Department of Health and Welfare. Dr. Langer is a

Visiting Lecturer on the staff of the Harvard University School of Public Health.

In the group were: Dr. Werner Bustamante of Chile who came to Harvard from his position as instructor in pediatrics at the University of Chile; Dr. Ahmed El-Sherbini whose most recent position was Lecturer, High Institute of Public Health at Alexandria, Egypt; Dr. K. Joseph Peter from India, who served as Assistant Professor of Social and Preventive Medicine, Madras Medical College, Madras, India and Dr. Jean F. Rogier of this country who has been Director of the Health and Sanitation Division in Colombia.

Tuberculosis Abstract

There is much evidence that the immunity resulting from primary infection in childhood is bought at a great price. The risks that it entails are not small, since tuberculosis infections that remain latent during the early years of life may flare up in the form of overt disease after puberty. Rene Dubos, *Am. Rev. Tuberc.*, Aug. 1956.

Tuberculosis Clip Sheet from the National Tuberculosis Association, January, 1957

*The Maine Trudeau Society, Medical Section, Maine Tuberculosis Association

Necrologies

OSCAR F. LARSON, M.D.

1881-1957



Oscar F. Larson, M.D., former president of the Maine Medical Association, died at his home in Machias, Maine, April 10, 1957 after a brief illness.

The son of John A. and Myra L. Larson, he was born in Monson, Maine, April 6, 1881. He was graduated from Monson Academy, took a pre-medical course at Bowdoin College and received his medical degree in 1905 from the Albany Medical College. He practiced in Monson from 1905 to 1907, in Jonesport from 1907 to 1914 and in Machias from 1914 to the time of his death.

Dr. Larson had taken an active interest in State Association affairs, having served as president in 1943-1944, and prior to that as Councilor for the Fifth District. He had also served on several committees and, at the time of his death, was a member of the Medical Advisory Committee. At the annual session in June 1955, the Association was privileged to honor him with a fifty year medal in recognition of his devoted and untiring service as a member of the medical profession.

He was a member of the American Medical Association and a member and past president of the Washington County Medical Society and Maine Medico-Legal Society. He had been medical examiner for Washington County for twenty years.

Dr. Larson served as a lieutenant in the Naval Reserve in World War I and was a member of Ephraim Johnson Post, American Legion. He was also affiliated with the Masons and had received a fifty-year pin from that organization.

Surviving are his widow, Mrs. Josie Woodward Larson; two sons, Lt. Col. Thurman Larson, with the Army in Germany, and Karl V. Larson, M.D., East Machias; a daughter, Mrs. Frank Holmes, Bangor; and seven grandchildren.

PAUL R. CHEVALIER, M.D.

1909-1957

Paul Roy Chevalier, M.D., of Lewiston, died February 8, 1957, of congestive heart failure. He had been in ill health since November.

Dr. Chevalier was born in Lewiston on January 17, 1909, the son of Joseph A. and Claudia Roy Chevalier. A graduate of Lewiston High School, he received his medical degree from Georgetown Medical College in 1934. He had practiced medicine in Lewiston for 23 years.

He was a member of the American Medical Association, the Maine Medical Association and the Androscoggin County Medical Association. He had served as physician for the Lewiston Fire Department for the past three years and was a medical examiner for Androscoggin County. In World War II, Dr. Chevalier served in the U. S. Army Medical Corps with the rank of captain. He was a member of the American Legion and Veterans of Foreign Wars.

Surviving are his widow, the former Jeanne Audibert; three daughters, Madeline, Catherine and Louise, all of Lewiston, and a son, Airman 2/c Paul R. Chevalier, Jr., who is stationed at Lake Charles Air Force Base in Louisiana.



THOMAS TETREAU, M.D.

1869-1957

Thomas Tetreau, M.D., 88, died in Portland, Maine, on April 1, 1957.

He was born in Franklin, Vermont, January 30, 1869, son of Charles and Ursula Tetreau. He attended public schools in Lawrence, Massachusetts and was graduated from Ottawa University. He received his medical degree from McGill Medical College in 1896.

Dr. Tetreau moved to Portland in 1916 from Yakima, Washington, where he served as the first full-time county public health officer in the United States. He was health officer for the City of Portland for twenty-seven years, retiring in 1943. During the years, Dr. Tetreau worked hard for the passage of the law for the pasteurization of milk. Under his guidance a city ordinance was drawn up making compulsory the tuberculin testing of cows.

In 1945, the Maine Public Health Association made him an honorary life member in recognition of his contributions to

public health. And, in 1946, he received a medal from the Maine Medical Association in recognition of fifty years devoted to the practice of medicine. This was followed by a fifty-five year pin in 1951 and a sixty-year pin in 1956.

He was a member of the Portland Medical Club, Cumberland County Medical Society, Maine Medical Association, American Medical Association, American Statistical Association, and the American Public Health Association.

His survivors include six sons, Philip E., Dr. Francis A., optometrist, William J., M.D., all of Portland, Atty. Thomas, Jr., Cape Elizabeth, Charles A., Bangor, and the Reverend Richard D., SJ, Weston, Massachusetts; three daughters, Mrs. Catherine A. Hay, Falmouth Foreside, Mrs. Dorothy A. Hefferan, Bridgeport, Connecticut, and Mrs. Mary Jo Raupp, Detroit, Michigan; 28 grandchildren and three great-grandchildren; and a sister, Mrs. Rose Brown, Raymond, New Hampshire.

LAWRENCE W. CONNEEN, M.D.

1911-1957

Lawrence W. Conneen, M.D., 45, of Cumberland Foreside, died February 7, 1957, in a Portland hospital after a long illness.

Dr. Conneen was born in Portland July 2, 1911, son of the late Dr. Thomas F. and Jane Cunningham Conneen. He attended Portland parochial schools, was graduated from St. John's Preparatory School, Danvers, Massachusetts in 1929 and from Holy Cross, cum laude, in 1933. He also received an award for excellence in chemistry. He received his medical

degree from Georgetown University in Washington in 1937 and interned at Gallinger Memorial Hospital there. He was associate radiologist at the Mercy and Children's Hospitals in Portland and at the Trull and Webber Hospitals in Biddeford.

Surviving are his widow, the former Barbara Ann Nugent; a son, Laurie F. Conneen; two daughters, Jane C. and Deborah Ann Conneen; a brother, Thomas F. Conneen, Portland; and two sisters, Kathleen M. Conneen, Portland, and Mrs. Frederick Carmody, Annapolis, Maryland.

C. C. PEASLEE SR., M.D.

1870-1957

Clarence Capen Peaslee, Sr., M.D., 86, of Portland died February 16, 1957, after a brief illness. He formerly lived at 42 Goff Street, Auburn.

Born in Biddeford, August 30, 1870, he was the son of Dr. George L. Peaslee and Abbie Philbrick Peaslee. He received his early education in Biddeford schools and was graduated from Bowdoin College Medical School in 1897, beginning practice in Auburn that same year. Dr. Peaslee practiced medicine in the Lewiston-Auburn area more than a half century, retiring in 1951 because of ill health. He then moved to Portland.

A member of the Maine Medical Association and the Androscoggin County Medical Association, Dr. Peaslee was on

the consulting staff of the Central Maine General Hospital. At the 1947 annual session of the Maine Medical Association, Dr. Peaslee was presented with the association's medal in recognition of fifty years in the practice of medicine and in 1952 he received a fifty-five year pin.

He was also a member of the High Street Congregational Church, Tranquil Lodge, AF & AM, the chapter and commandery, 32nd degree Scottish Rite, Valley of Portland, and a life member of Kora Temple, AAONMS.

He is survived by his widow, the former Susan Ames Hight; a son, C. Capen Peaslee, Jr., M.D., of Portland; two granddaughters and two great-grandchildren.

County Society Notes

FRANKLIN

March 11, 1957

Paul A. Fichtner, M.D., discussed the proposed Blue Shield Plans at the meeting of the Franklin County Medical Society. It was voted, unanimously, that the society accept all three plans as proposed.

Mass polio inoculations have been carried out in Farmington including the Rotary and Lions' Clubs and their wives and 87 firemen and their wives.

PAUL E. FLOYD, M.D.
Secretary

LINCOLN-SAGADAHOC

March 19, 1957

The monthly meeting of the Lincoln-Sagadahoc County Medical Society was held at the Ledges Inn, Wiscasset. There were fifteen members present.

Stanley R. Lenfest, M.D., President, called the meeting to order. The copy of a telegram to the Maine Medical Association relating the status of the sudden exhaustion of Salk Vaccine nationally was read, and the decision was made to postpone any definite plans about urging this vaccine upon the public.

John F. Andrews, M.D., reported on a meeting in Brunswick relative to propagation of knowledge of pending Federal legislation regarding health and welfare. He stressed the need for the physician to take an active interest in this legislation and the need to write legislators advising them on the merits of proposed measures.

Francis A. Winchenbach, M.D., announced that Dr. Andrews has been appointed to the Nominating Committee of the Maine Medical Association.

The proposed changes in Blue Shield were abstracted and read by the secretary, and the Preferred Plan was discussed. It was voted to instruct the delegates to the interim meeting of the House of Delegates that the county society feels the proposed fee schedule is acceptable, except that more allowance should be made for surgical assistants' fees. The consensus was that the income limit for complete coverage or specified procedures only is acceptable, and that there should be some mention on the statement form sent to subscribers with their settled bills that any fees for services not specified in the contract would be due the billing physician.

GEORGE W. BOSTWICK, M.D.
Secretary

PENOBSCOT

John E. Whitworth, M.D., of Bangor, was appointed a member of the Executive Council of the New England Otolaryngology Society.

NEW MEMBERS

KNOX

Merrill J. King, Jr., M.D., 22 White Street, Rockland

PENOBSCOT

John F. Radebaugh, M.D., 81 Parkview Avenue, Bangor

Announcements

Thirty-Fourth Annual Meeting of Woman's Auxiliary to the American Medical Association

New York State is honored by serving as host to the American Medical Association and its Woman's Auxiliary, the latter, the parent body of all State and County Auxiliaries.

Mrs. Harry F. Pohlmann of Middletown, New York, has been named Convention Chairman for this meeting by the National President, Mrs. Robert Flanders of Manchester, New Hampshire.

Headquarters for the Auxiliary's meeting will be the Hotel Roosevelt at Madison Avenue & 45th Street, New York City, from June 3rd to 7th, 1957. The Roosevelt is within walking distance of the Waldorf-Astoria Hotel, where the A.M.A.'s House of Delegates meet; and proximity to Fifth Avenue & Madison Avenue shops, theatres and innumerable points of interest, make the location of headquarters ideal.

Registration will open on Sunday, June 2nd, 11:30 a.m. to 4 p.m. and continue through Thursday. On Monday, June 3rd, and Wednesday afternoon, June 5th, there will be Round Table discussions of interest and educational value to all physicians' wives. Members and guests are cordially invited. The General meeting will be held Tuesday, Wednesday, and Thursday until noon, and a Board of Directors' meeting at

one o'clock on Thursday, and a Post-Convention Workshop for State Presidents, Presidents-elect and National Committee Chairmen on Friday, June 7th.

SOCIAL ACTIVITIES

Monday, June 3rd — a Tea, honoring President & President-elect.

Tuesday, June 4th — Luncheon in honor of the National Past Presidents, at which Howard Rusk, M.D., Director of the Institute of Physical Medicine and Rehabilitation of the New York University Bellevue Medical Center, will be the guest speaker.

Wednesday, June 5 — Luncheon in honor of the National President and President-elect. Dwight H. Murray, M.D., President of the American Medical Association, will be the guest speaker.

Thursday, June 6 — Annual dinner for Auxiliary members husbands and guests, at which the guest speaker will be Professor Allen Richard Foley of Dartmouth College.

It is hoped that each State and County Auxiliary and the territorial Auxiliaries will be well represented. A cordial welcome awaits each doctor's wife!

MRS. EZRA A. WOLFF
Convention Publicity Chairman

Residencies Available

Approved residencies in Physical Medicine and Rehabilitation available at New York University-Bellevue Medical Center beginning July 1, 1957. American graduates with approved internships eligible for OVR Fellowship, starting at \$3,400.00 per year with added dependency allotment. Make immediate application to: Joseph G. Benton, M.D., Institute of Physical Medicine and Rehabilitation, 400 East 34 Street, New York 16, N. Y.

Scientific and Clinical Conference

The convention of the joint organizations: The American Association of Rehabilitation Therapists, the Association for Physical and Mental Rehabilitation and the Association of Medical Directors and Co-ordinators will be held at the Conrad Hilton Hotel in Chicago on July 7 to 12, 1957.

Symposium On Tuberculosis And Other Chronic Pulmonary Diseases

The Sixth Annual Symposium for General Practitioners on Tuberculosis and other Chronic Pulmonary Diseases will be held in Saranac Lake, New York from July 8th to 12th, 1957. It is approved for 26 hours of formal credit to members of The American Academy of General Practice.

This five-day course is designed particularly for General Practitioners and presented over a period short enough so they may readily attend. Many of the sessions are informal panel discussions with ample opportunity for questions from the audience.

Sessions will be held in the various sanatoria, hospitals and laboratories in the Saranac Lake area. The faculty will consist of physicians, surgeons and scientists from Saranac Lake as well as guest lecturers.

Many doctors attending previous sessions of this Symposium brought their families with them to enjoy the many vacation facilities of the surrounding Adirondack Mountains. So that families may have the use of the family car, free bus transportation will be provided to the various meeting places for the doctors attending the course. Excellent housing accommodations are available in and around Saranac Lake.

The registration fee for the Symposium is \$40. Further information and copies of the program may be obtained by writing Henry W. Leetch, M.D., General Chairman, Symposium for General Practitioners, P. O. Box 11, Saranac Lake, N. Y.

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Medical Civil Defense Conference

June 1, 1957 — Waldorf-Astoria, New York

9:00 — 12:15 Morning session. Subjects to be discussed include: Radiation Hazards, Medical Care.
12:15 — 2:00 Luncheon — Empire Room
2:00 — 5:15 Afternoon Session. Subjects to be discussed will include: Utilization of Nagasaki and Hiroshima Casualty Studies, Medical Management — Radiation Casualties, FCDA Film "Treatment of Nerve Gas Casualties"

Annual Assembly In Otolaryngology

The Department of Otolaryngology, University of Illinois College of Medicine, announces its Annual Assembly from September 30 through October 6, 1957. The Assembly will consist of an intensive series of lectures and panels concerning advancements in otolaryngology, and evening sessions devoted to surgical anatomy of the head and neck and histopathology of the ear, nose and throat.

Interested physicians should write direct to the Department of Otolaryngology, 1853 West Polk Street, Chicago 12, Illinois

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1956-1957

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The Journal of the Maine Medical Association

Volume Forty-Eight

Brunswick, Maine, June, 1957

Number 6

Blood Banking And Transfusions* Immunohematologic Basis and Practical Applications

CHARLES S. LIPSON, A.B.**

The first successful transfusion was performed in 1667 when Denys and Emmerez¹ of France infused a patient with sheep's blood. Amazingly enough, that patient and two others survived, but their fourth patient died following his third transfusion, and the idea was abandoned.

Transfusion of human blood as a regular therapeutic procedure did not become feasible until 1900 when Landsteiner² discovered the isoagglutinogens of red cells and the corresponding isoagglutinins of serum. On the basis of this discovery, four blood groups, A, B, AB, and O were established, and it became possible to perform transfusions without the catastrophe of severe hemolytic reaction and death. However, there still occurred with disturbing frequency a large number of unsuccessful transfusions with reactions despite the most careful typing and matching of the patients' and donors' ABO groups. It was noted that these reactions arose only

in men and women who had had previous transfusions, or in some women who had had children. The cause of this difficulty was determined in 1940 when Landsteiner and Wiener³ discovered the Rh factors. Since this initial discovery, Wiener and his associates and Race, Fisher, and others⁴ in England have unraveled the complicated picture of the Rh factors. Other workers⁵ have discovered more blood groups, such as the Kell factor, Duffy factor, etc., some of which are widespread, and some rare.

It is now possible to type and match patients and donors so thoroughly that incompatibility ought to be exceedingly rare. Unfortunately, transfusion reactions still occur. The majority of incompatible transfusions which produce serious hemolytic reactions are due not to the rare and little known factors, which are usually not tested for, but which can be determined, but rather to human error in the typing and matching of the ABO and Rh factors.

There are two major sources of error in blood banking. First, the technician may be incompetent. Although the subject matter of this paper is not the

*Presented at York County, H. D. Goodall Hospital, Sanford, Maine.

**Harvard Medical School, Third Year.

training of blood bank technicians, it should be pointed out that most full time blood bank technicians who have fulfilled the requirements of the American Association of Blood Banks are competent. It has been found, too, that errors due to incompetence have been committed by interns and physicians who have had no adequate training in blood banking, and who thus should not do the crossmatching and typing without supervision.

The second source of error, a primary concern of this paper, is that the procedure used by the hospital may be inadequate to insure that the patient get the right unit of blood. Whenever there is more than one patient in the hospital who is in need of a transfusion and more than one unit of blood in the refrigerator, there is danger that the patients or the bloods may be confused, with a resultant catastrophe. There must be a system of cross checks to insure the safety of the patients, and this requires much repetitious paper work. But an error due to faulty procedure is unnecessary. Proper blood bank procedure is a part of hospital routine in which there are no short cuts.

The average doctor pays little attention to the techniques and procedures of blood banking. The doctor of necessity delegates much tedious work to those people in the blood bank, thus entrusting the lives of his patients to them. A physician would be justly disturbed to lose a patient because of an avoidable error. The factor of error is an important one because it has been estimated that the mortality due to blood transfusions in the United States is about one death in 1,000 to 3,000 transfusions.⁶ Blood transfusion ranks with appendicitis and anaesthesia as a cause of death.⁷ It therefore behooves the physician to understand the ways of the blood bank and always to be on guard against laxity in the measures used to protect his patients. This dictum applies equally to physicians in large metropolitan centers and in smaller cities and rural areas. All too often the physician who is one of a hundred or more doctors on the staff of a large city hospital tends to ignore such things. Perhaps the doctor in a small hospital is more fortunate in that his voice is more easily heard in the day-to-day operation of the hospital. If all physicians took an interest in such matters, the standards of blood bank procedure would certainly rise throughout the country.

The plan of this paper is to discuss the immunohematologic basis of blood banking and to follow a patient's and donor's bloods through an accepted procedure of testing and crossmatching, emphasizing the techniques used for the safety of the patient. It is based primarily on the author's experience at the Beth Israel Hospital, Boston, which transfuses more than 3500 pints of blood a year and has not had a transfusion fatality in twenty years of operation.

THE ABO SYSTEM

Human red cells can be characterized by a genetically

determined set of isoagglutinogens which make up the ABO system. In simple terms, this system can be thought of as follows: There are two positions on each red cell which may be filled by an antigen or isoagglutinogen. Each position is controlled by a gene. There are three genetic possibilities for each position, A gene, B gene, or O gene. Therefore, taking both positions into account, an individual's red cells may have any of the following antigen combinations, AA, AB, AO, BB, BO, OO. O means that there is no antigen occupying a given position. At this point, a distinction must be made between an individual's phenotype and genotype. Genotype refers to a person's genetic make-up. Phenotype refers to the visible results of his genotype. Thus, an individual who is considered to belong to the phenotype group A may have the genotype AA or AO. It is not possible to tell which genotype he does belong to in this instance. Therefore, although there are six genetically determined blood groups, there are only four possible phenotypes, A, B, O, and AB, which can be discovered by routine laboratory testing.

In addition to the red cell antigens, each person carries in his serum an antibody or isoagglutinin for the blood group antigen which he does not have in his red cells. Thus, a person who belongs to group A carries in his serum antibodies which will agglutinate the red cells of a person who belongs to group B, and vice versa. It is these serum antibodies which make an uncrossmatched first transfusion so dangerous.

With the preceding information Tables I, II, and III can be set up.

TABLE I

Patient's cells	Antiserum type	
	Anti A	Anti B
A	+	—
B	—	+
AB	+	+
O	—	—

Table I shows the method by which a person can be typed. If his cells are tested with known antisera, he is considered to be of the same type as the antiserum with which his cells agglutinate. If he reacts with both antisera, he is group AB, and if neither antiserum, he is group O.

TABLE II

Patient's cells	Donor's serum			
	A	B	AB	O
A	—	+	—	+
B	+	—	—	+
AB	+	+	—	+
O	—	—	—	—

TABLE III

Patient's serum	Donor's cells			
	A	B	AB	O
A	—	+	+	—
B	+	—	+	—
AB	—	—	—	—
O	+	+	+	—

Tables II and III enable one to understand the theory of universal donors and recipients. At first glance, it is apparent that there is no such thing as a universal donor or recipient. O cells, it can be seen, do not react with any serum, but O serum will agglutinate all cells except O. The only serum which will agglutinate no cells is AB serum. But AB cells will be agglutinated by all sera except AB. However, the physical facts of transfusion make it possible for O blood to serve in an emergency for all types and also for the AB patient to receive any type blood in an emergency. If a transfusion is given slowly, the antibodies present in the plasma of the donated blood will be diluted about tenfold in the plasma of the recipient, thus rendering the antibodies harmless, or nearly so, if they are of the wrong type, and in vivo hemolysis will be slight. However, if cells of the wrong type are given, the results will be disastrous. No amount of dilution of the donated cells will prevent them from being hemolyzed in vivo by the undiluted antibodies of the patient. Thus, O blood can be given universally because the cells will not be hemolyzed and the antibodies will be diluted. AB patients can receive any type of blood because they have no antibodies against red cells and they will dilute the antibodies received. Although the preceding covers the essential theory of universal donors, it is not the whole story. There are techniques available for making a transfusion with incompatible plasma safer for the recipient which will be taken up under the section on the typing of donors.

THE RH SYSTEM

The Rh system is more complicated than the ABO system. It, too, is genetically controlled and never changes during a person's lifetime. At the present time, there is the added difficulty of duplicate nomenclatures. When Landsteiner and Wiener discovered the system in 1940, the name Rh was given to the agglutinable factor which was first found with an antiserum to Rhesus monkey blood. The term Rh refers to the first two letters of Rhesus. This factor was later found to be the cause of the great majority of cases of erythroblastosis fetalis.⁸ Further work disclosed that the system was made of not one antigen, but three related pairs of antigens. Wiener, following the original pattern, set up the following nomenclature: Rh⁰ — Hr⁰, rh' — hr', and rh'' — hr''. Fisher and Race, in England, have set up the terminology D-d, C-c, E-e, corresponding to Wiener's

terms. In the explanation that is to follow, the Fisher-Race nomenclature will be used, because the author finds it less confusing.

The terms "Rh positive" and "Rh negative" refer specifically to the presence of the D antigen on the red cell. If it is present, the individual is Rh positive; if it is absent, the d antigen is present in its place, and the individual is Rh negative. However, one can consider that there are two loci on the red cell, each one controlled by a different gene on a different chromosome, one of each pair of chromosomes being inherited from each parent. Thus, an individual may have the genotypes and determinable phenotypes DD, Dd, and dd. The first two combinations are found in Rh positive persons and the third in Rh negative individuals. Thus, in testing with antisera, Table IV can be formulated.

TABLE IV

Reaction with Antisera		Antigens on red cell	Rh type
Anti-D	Anti-d		
+	—	DD	Pos.
+	+	Dd	Pos.
—	+	dd	Neg.

Unfortunately, anti-d serum is exceedingly rare, and so it is usually impossible to test directly for the d antigen. It is, of course, present in Rh negative individuals, but its presence in Rh positive individuals can only be inferred by genetic studies of the family, or by reference to tables of frequency of the various antigens. This can be done after the C,c,E,e antigens are determined.

The C-c, and E-e antigens behave in the same manner as the D-d antigens. Thus, each individual, in addition to having one of the three possible D-d combinations, has one of three C-c combinations and one of three E-e combinations. Antisera are readily available for these four antigens, and thus it is possible to test an individual for five out of six possible antigens.

So far, we have shown no reason to include the C-c and E-e antigens in the Rh system. Genetic studies on various families and on large groups of people have shown that all three pairs of antigens travel together. Fisher and Race⁹ have explained this by assuming that the genes for the three antigens are all grouped on the same chromosome. Thus, an individual might have one chromosome with genes for DcE and another with the genes for dCe. His red cells would have the combination of antigens DcE/dCe or DdCcEe, the individual being heterozygous for all factors and Rh positive. He would pass on to his children either the group DcE or the group dCe.

It is readily seen that there are only eight possible combinations of the six genes taken three at a time if only one of each pair is included. These are DCE, DCE,

DcE, Dce, dCE, dCe, dcE and dce. There are, therefore, thirty-six possible genotypes, taking all the possible pairs of the above combinations. However, twelve combinations make up 99% of the population and only seven make up 85% of the population. It is therefore possible to determine the genotype of an individual with only a 5 to 10% chance of error by making use of the five available antisera and the statistical tables.¹⁰

It is rarely necessary to determine an individual's genotype in blood banking. Most commonly, this is done only as an aid to prognosis concerning children for Rh negative women. It may also be helpful in disputed paternity cases. However, it is frequently necessary to test a donor's blood with the C,c,E,e antisera, especially if the donor is Rh negative, or if the intended recipient has a known sensitivity to one of the Rh antigens because of a prior transfusion or pregnancy.

There is an important, antigenically potent variant of the D factor which must be tested for in donors who appear to be Rh negative. This is the D^u factor¹¹. Ordinary anti D serum will not agglutinate the red cells of a person who carries this factor, and yet D^u blood may immunize an Rh negative person against ordinary D factor. Donors who are found to have the D^u factor are classified as Rh positive. It is not necessary to test for the factor in a recipient because there is usually little harm in classifying an Rh positive recipient as Rh negative.

The Rh system does not include a complementary set of isoantibodies as does the ABO system. Most commonly the presence of antibodies is due to a prior transfusion or, in women, to pregnancy. It cannot be emphasized too strongly that sensitivity can occur to all of the Rh factors.¹² Thus, an Rh positive person with the genotype Dce/dcE could develop an antibody to C antigen upon exposure to it. Also, it is possible to develop an antibody to more than one Rh factor at a time. Thus, an individual with DCe/DCe blood who is transfused with DcE/Dce might become immunized to either c or E or both. In about 60% of cases of erythroblastosis fetalis, the mother is immunized to C as well as D.

As transfusion is becoming a more commonplace therapeutic procedure, more Rh positive women are producing erythroblastic infants. Thus, although recipients are usually only classed as Rh positive or Rh negative, more thorough Rh typing of women in the child-bearing age may be indicated to prevent such unhappy occurrences.¹³

In addition to the Rh system and its variants (there is at least one variant for most of the Rh antigens)¹⁴ there are many other known antigens on human red cells. They include the MN system, Kell, Lewis, Duffy and Kidd systems, etc. Most of these factors behave in the same manner as the Rh antigens. Thus an individual will have MM, MN, or NN antigens, or KK, Kk, kk antigens in the Kell system. Antibodies are produced to these antigens only on exposure usually.

Fortunately, most of these antigens stimulate antibody poorly, and therefore, these factors are of little importance to routine work. However, they must be thought of and tested for whenever a recipient will not crossmatch with a seemingly compatible blood or when an Rh positive woman produces an erythroblastic child.¹⁵ In recent years it has been discovered that a number of cases of erythroblastosis fetalis are due to an ABO group incompatibility between the mother and fetus. Therefore, this, too, must be thought of when an Rh positive woman produces an erythroblastic infant.¹⁶

REACTIONS USED IN BLOOD BANKING

All of the procedures used in blood banking depend on agglutination of red cells by an antibody present in a serum mixed with the cells.

The determination of the presence of an antigen cannot be done simply by mixing red cells and antisera. There are a number of types of antibodies, each of which works best under certain physical conditions. For our purposes we can define four types of antibodies. The first is the complete or saline agglutinating antibody. Such antibodies will agglutinate red cells under simple conditions. They work best when the red cells are suspended in saline and the temperature is about 20°C. These antibodies will also agglutinate red cells suspended in a high protein medium, but high temperatures reduce their action and may even prevent agglutination. The second group of antibodies, known, as incomplete, or blocking, or immune antibodies, will coat the surface of a red cell, but will not agglutinate it unless there is a high concentration of protein present in the mixture.¹⁷ These work best at 37°C. They will not agglutinate cells suspended in saline, although they will often agglutinate cells at room temperature. The third group of antibodies are those which will coat the surface of the red cells, but which will not cause agglutination under either of the above conditions. They can be detected only by the Coombs antiglobulin test. These antibodies are generally thought to be incomplete or immune antibodies of an atypical sort. The fourth group of antibodies are not of much concern in blood banking except for their nuisance value. These are the cold agglutinins which have the property of agglutinating red cells when the temperature is low. They may cause great confusion in typing and crossmatching, but can be recognized by the fact that sera containing these antibodies also agglutinate their own red cells; heat (37°C) prevents the agglutination. Bloods containing cold agglutinins are suitable for transfusion providing adequate typing and crossmatching can be done.

The ABO system and the Rh system both produce antibodies of various types. The common isoantibodies of the ABO system are saline antibodies. They will agglutinate red cells under almost all conditions, and so there is usually little difficulty in determining the presence of the antibody, or in using the antibody

to determine the presence of the antigen. Saline or high protein conditions will both work, but heat should be avoided.

Occasionally, immune antibodies are produced against A and B antigens (in addition to saline antibodies). Ordinarily, these are not very important, but they may be tested for when O blood is being used as a universal type.¹⁸ An indirect Coombs test is the method for determining these.

Individuals sensitized to the Rh factor will produce saline, immune, and atypical immune antibodies. Thus, in crossmatching, one must be careful to pick up all types of antibodies by using appropriate conditions. Care must also be taken when using commercial Rh antisera for Rh grouping. Both saline and high protein antisera are available. The procedures used with the two antisera are different and the technician must be careful to use the proper procedure for the antiserum in use. Thus, if saline antiserum is being used, heat should never be applied. If high protein or immune antiserum is being used, the cells should never be suspended in saline. It is usually not necessary to apply heat with the commercial immune Rh antisera, but it is a good idea to incubate at 37°C to confirm an Rh negative finding in many cases. The advisability of using heat depends on many factors in the serum and the manufacturers' directions are the best sources of information about any particular antiserum.

The less frequently found factors, such as Kell, Lewis, etc., produce either immune or atypical immune antibodies. The best way to pick these up when cross-matching is to use an indirect Coombs test.

THE COOMBS TESTS

The direct Coombs test¹⁹ is used to discover an antibody which has coated red cells without causing agglutination. Such an antibody, when in the presence of active complement, will cause hemolysis of red cells in vivo. This is usually the case in erythroblastosis fetalis,

and thus the direct Coombs test is of great value in confirming erythroblastosis in a jaundiced infant.

The indirect Coombs test¹⁹ is used to discover antibodies suspended in serum which could coat a cell with the appropriate antigen without causing agglutination. This test is frequently used as a crossmatch procedure. It is also used to discover induced sensitivity with atypical immune antibodies to various Rh factors and to the Lewis, Kell and Duffy factors, etc.

The Coombs anti human globulin serum is made by injecting rabbits with pooled human gamma globulin. The rabbits then produce saline antibodies for a wide variety of human antibodies. If the pool of gamma globulin is from a large enough number of people, antibodies will be produced for all of the human antibodies for the Rh and other factors. If red cells coated with antibodies are mixed in a saline suspension with the Coombs serum, agglutination takes place.

The direct Coombs test is performed by making a saline suspension of the suspect red cells and watching for agglutination when Coombs serum is added.

The indirect Coombs test is done by incubating red cells with the suspect serum. The red cells must be known to have the antigen to the antibody suspected in the serum. Incubation coats the red cells with the antibody, after which the procedure for the direct Coombs test is done.

It is easy to see that the indirect Coombs test is ideal for crossmatching. If the recipient's serum contains any antibodies for the donor's cells, or vice versa, it will easily be picked up by the test, regardless of what type of antibody is present.

SELECTION OF THE DONOR

The precautions to be observed in the selection of donors and the drawing of a blood are designed to serve a twofold purpose. Both the patient and the donor must be protected. To be sure that no harm will come to the donor, a thorough history and a cursory examina-

SUMMARY CHART

	Saline Suspension	High protein suspension	Indirect Coombs test
Saline antibody	+	+	O ¹
High protein antibody Immune or blocking	O	+ ⁴	+ ²
Atypical antibody	O	O	+ ³

1. The indirect Coombs test cannot be done because agglutination will occur during incubation, thus making the test unnecessary.

2. Depending upon the antibody titer and its agglutinating ability, this test may or may not be possible or necessary.

3. This is the only way these antibodies can be found.

4. Some of these work in high protein alone, and some need incubation at 37°C for varying amounts of time to be demonstrated. They all work best at 37°C.

tion are done. If there is doubt of the fitness of the donor, he should be excluded, regardless of his eagerness to give.

The American Association of Blood Banks suggests the following criteria for the suitability of a donor:

- a) The patient must weigh more than 110 pounds. Assuming that blood amounts to roughly 10% of total body weight, a donation of 500 ml. would amount to 10% of the blood supply of a person weighing 110 pounds. Persons weighing less may (if absolutely necessary) donate 250 ml. Donations of this amount could perhaps find some use in Pediatrics.
- b) Temperature must be less than 99.6° with an oral thermometer kept in the mouth for two minutes.
- c) The pulse must be between 60 and 100 beats per minute.
- d) The blood pressure must be within 100/50 and 200/110.
- e) The hemoglobin concentration of the blood should not be less than 13.5 gm. for men and 12.5 gm. for women as determined by the copper sulfate method.

The following items in the history should always be elicited. A positive answer is cause for rejection of the donor. Some of these criteria serve to protect the donor, others the recipient, still others both.

- a) Bleeding abnormalities
- b) Convulsions (except in infancy)
- c) Any disease of the cardiovascular systems
- d) Surgery during the previous 6 months and tooth extractions during the previous week
- e) Pregnancy during the past 6 months
- f) Any large weight loss in recent past, except planned weight reduction due to obesity
- g) Drug addiction or drunkenness
- h) Diabetes, requiring insulin
- i) Any live organism vaccination or animal antiserum within the previous two weeks for smallpox and yellow fever, and one week for most others, including Diphtheria, Pertussis and Tetanus; for Rabies, one year.
- j) Any upper respiratory infection during the previous week
- k) Brucellosis within the past two years
- l) Any active skin diseases or any chronic allergic condition such as asthma
- m) Transfusions within the past six months
- n) Active TB
- o) Malaria. Anyone who has had a single attack of malaria, or who has lived in an endemic area should not be accepted until at least two years have elapsed since the last attack and/or the stoppage of suppressive treatment. If a person has had recurrent malaria, he is to be excluded.
- p) Syphilis. Anyone with a history of syphilis is to be excluded unless evidence of treatment with a subsequent return to a negative serological test for syphilis (S.T.S.) can be proven.
- q) Hepatitis. Serum and Infectious Hepatitis are both transmissible via the blood stream. Anyone with a history of jaundice, unless proven to be obstructive, must be rejected. In addition, anyone who has been exposed to the disease during the previous six months is to be rejected.
- r) Persons with any blood disease should be disqualified.
- s) Persons should not be accepted for donations oftener than every eight weeks.

COLLECTION OF THE BLOOD

The most important precautions in the venesection are directed towards preventing bacterial contamination of the blood. Even at storage temperatures of 4-6°C, a small inoculum of bacteria will grow enough in ap-

proximately fourteen days to cause a severe pyrogenic reaction during the transfusion.

A tourniquet must be applied, and a suitable vein found, before the site is prepared. After the vein has been selected, the tourniquet may be released and the site prepared. The area should be washed with soap or detergent to remove dirt and then a solution of 10% acetone and 70% alcohol should be applied to remove fat. After this, the area should be swabbed with an antiseptic solution (3% iodine, Zepheran, etc.) and then acetone and alcohol solution should be re-applied. The site should then be allowed to air dry for two minutes while covered with a sterile gauze sponge. At no time during the preparation of the site should the sponges or the area be handled with fingers, nor should fingers be put near the area during the venesection. If, during the process, the vein should be lost and palpation becomes necessary, it should be done after the needle has pierced the skin.

The blood is allowed to run into the bottle up to the 500 ml. mark, or if the newer plastic bags are in use, 525 to 530 gms. of blood are collected as measured by a small spring scale. Before removing the needle from the donor's arm, blood must be collected in the pilot tubes. If the bottle method is used, the tubing is clamped, the needle is withdrawn from the bottle and inserted into the pilot tube, and the blood is allowed to run into the tube. If plastic bags are in use in which the donor tubing is part of the bag, the tubing must be sealed with a sealing machine or tied off with a knot. The tube is then cut and the blood is run into the pilot tubes. Never, never fill the pilot tubes from the bottle.

If, for any reason, a venesection must be interrupted before the full amount of blood is collected, the original equipment must not be used again. A new venesection site and a complete new donor kit should be used. If the blood bank does not use a new disposable needle for each donor, great care must be taken to assure that homologous serum hepatitis is not passed from donor to donor.

IDENTIFICATION AND TYPING OF DONOR BLOOD

Even before the blood is drawn from the donor, steps must be taken to prevent the blood from being confused with other samples.

The bottle should have on it, before the venesection is begun, a tag (Fig. 1) on which is recorded the donor's name and a number which corresponds to the number on the donor's information card (Fig. 2a). In addition, all of the pilot tubes should be numbered in advance, and the tube which is to be attached to the blood bottle should be taped on in advance. If plastic bags are used, the tube should be taped on as soon as there is enough blood in the bag to do so. In either case, the tube which is the master pilot tube should be on the bottle before any blood is put into the tube. In addition to the master pilot tube, the Beth Israel Hospital collects two more pilot tubes. The first is for

a serological test for syphilis and the second is used by the blood bank technicians for routine laboratory work. The master tube is kept as a spare for emergencies.

As soon as the venesection is completed, the bottle of blood and its attached pilot tube should be put in the refrigerator in the section reserved for untyped bloods. The laboratory personnel may then perform at their leisure, if there is no emergency, the routine laboratory tests. The following tests should be done on all donor bloods:

- 1. Serological test for syphilis (S.T.S.) No blood should ever be given to a patient until a negative S.T.S. is performed or the blood refrigerated for 96 hours.
- 2. ABO grouping by two different methods.
- 3. Rh typing
- 4. Recording the data found on testing on the tag attached to the blood and on the donor information card. (Fig. 2b)
- 5. Transferring the blood to the portion of the refrigerator reserved for that type of blood.

No attempt will be made to outline thoroughly the techniques of typing. There are many good ways to perform the tests. Some banks use small test tubes, some use well slides, and others use flat slides. In each case, the techniques used are slightly different. It is difficult to say which technique is to be preferred. The most important point is that a method should be chosen and then performed properly. If this is done, the physician can feel satisfied that his blood bank is a good one. For complete instructions for the performance of the tests, the reader is referred to the manual of the A.A.B.B. or to the literature which is usually provided by the manufacturer of the typing serums. In most cases the physician will be able to tell if an error is being made by looking to see if the antisera used are saline or high protein and if the technician is acting accordingly.

In addition to testing red cells with antisera for the ABO groups, the donor's serum should also be tested with known red cells. Tables II and III show the results which are obtained with known cells and unknown serum. This test should always be a routine part of ABO testing of both donors and patients. It helps eliminate error and is useful in picking up cold agglutinins also.

Another procedure which can be used to help eliminate error due to getting pilot tubes confused is preliminary testing of unknown donors before blood is drawn. This can be done by mixing cells taken from an ear lobe or finger puncture, done to test specific gravity of the blood, with A, B, and Rh (D) antisera. The results can then be checked against the results of the routine laboratory typing.

ADDITIONAL TESTS AND PROCEDURES
ON DONOR BLOOD

If a blood is found to be Rh negative on routine testing, further tests must be done. First, it should be proven negative by testing for the D^u variant, with an indirect Coombs test, incubating the cells with anti D



BETH ISRAEL HOSPITAL . . . BOSTON, MASS.

CAUTION:

SEE REVERSE SIDE

WHOLE BLOOD (IN ACD)

NO.

GROUP

RH

SEROLOGY SATISFACTORY: RAPID STANDARD

DONOR'S NAME

DATE DRAWN

DO NOT USE AFTER

RECIPIENT

NAME

GROUP

RH

X MATCH BY

DATE

TRANSFUSED BY

RECORD TRANSFUSION IN PATIENT'S RECORD

LEAVE THIS TAG ATTACHED UNTIL TRANSFUSION IS COMPLETED.

RETURN THIS TAG TO BLOOD BANK

(OVER)

CAUTION

- 1. Store continuously at 4° - 6° C (39° - 43°F)
- 2. CROSSMATCH BEFORE USING.
- 3. Mix thoroughly before using.
- 4. ALWAYS PREFILTER OR ADMINISTER THROUGH A FILTER.
- 5. Administer without warming.
- 6. READ LABEL CAREFULLY TO ASSURE THAT BLOOD GROUP AND TYPE ARE THE SAME AS THOSE OF RECIPIENT.
- 7. Do not add other medication to bottle of blood except immediately prior to administration.
- 8. Filtered blood must be used within 3 hours or discarded.
- 9. Stop transfusion at once if there is a reaction.
- 10. Report reactions to Blood Bank.

FIG. 1. Tag which is attached to the bottle of blood. Space is provided for the name, number, and blood type of donor as well as the name, blood type, and transfuser of the recipient.

BETH ISRAEL HOSPITAL

BOSTON, MASS.

DONOR EXAMINATION and RELEASE

BLOOD NO.....REPL. VOL. ☐ R. C. ☐ PROF. ☐ VOL. ☐ R. C. WALK. ☐

DONOR.....AGE.....SEX.....

LAST FIRST

ADDRESS.....DATE LAST DONATION.....

EXAMINATION: Wt. > 100 lbs. ☐ Temp. < 99.6 ☐ Hgb. {M > 13.5
F > 12.5 ☐ BLOOD PRESSURE {Sys. > 100 < 200 ☐
Dia. < 100 - 110 ☐

PULSE: > 48 < 120 ☐ NO RASH ☐ NO JAUNDICE ☐

HISTORY: Present good health; common cold or acute respiratory infection; serious illness within 2 months; syphilis past or present; malaria at anytime or history of exposure in endemic area; history of known or suspected infectious hepatitis (catarrhal jaundice) at any time in donor or within 12 months in donor's household; erythroblastotic infant; miscarriages, transfusion reaction; active tuberculosis; undulant fever or brucellosis; St. Vitus Dance - chorea; active or history of rheumatic fever; (examine heart if pt. had rheumatic fever); skin rashes or diseases; asthma; bronchitis; active hay fever; severe allergy; pregnancy (present or within 6 months); bleeding or bleeding tendencies; stomach ulcer; recent tooth extraction; heart disease; transfusion within 6 months.

DONOR'S RELEASE: I am voluntarily furnishing blood to the Beth Israel Hospital for and for that purpose I am, at my own risk, submitting to the tests, examinations, and procedures customary in connection with donations of blood. I agree that neither the Beth Israel Hospital nor any surgeons, physicians, technicians, nurses, agents, or officers connected with it or any of them, or who may be participating otherwise in this work, shall be in any way responsible for any consequences to me resulting from the giving of such blood or from any of the tests, examinations, or procedures incident thereto, and I hereby release and discharge each and all of them from all claims and demands whatsoever that my heirs, executors, administrators, or assigns have or may have against it or any of them by reason of any matter relative or incident to such donation of blood, and I agree that the above mentioned organization may use in any way that it may deem advisable any balance or residue of the blood, and any by-products therefrom.

IN WITNESS WHEREOF I have hereunto set my hand and seal this.....day of.....19.....

In the presence of.....(L. S.)

Examination By.....Withdrawn By

FIG. 2a. Donor examination and release card, containing all information obtained from the donor by history and physical examination. There is also a legal release of the hospital and its personnel from liability for injury to the donor.

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BOSTON, MASS.

BLOOD BANK RESERVATION

BLOOD No.....DATE DRAWN.....HOLD UNTIL.....DO NOT USE AFTER {

DONOR.....SEROLOGY SATISFACTORY: STANDARD ☐ RAPID ☐

LAST FIRST

BLOOD GROUP.....CHECKED ☐ RH TYPE.....CHECKED ☐ RH SUBTYPE.....

AMOUNT DRAWN.....TITER.....

RECIPIENT	ROOM OR	BLOOD	RH	X MATCH	RESERVED	RELEASED	TRANSFUSED	TRANSFUSED
LAST NAME	WARD	GROUP	TYPE	BY	DATE	DATE	DATE	BY
No.	SERVICE							
No.	SERVICE							
No.	SERVICE							
No.	SERVICE							
No.	SERVICE							
No.	SERVICE							

FIG. 2b. Blood Bank Reservation. Space is provided for the results of all laboratory work done on the donor blood. In addition, there is recorded on this card the name and vital data of the intended recipient.

serum. If the cells carry the D^u variant, the donor is classified as Rh positive. If the blood is still considered negative, the C-c, E-e antigens should be tested for. Almost all Rh negative people are dce/dce. Many blood banks do not give blood to Rh negative people unless the blood is proven C and E negative also. This view is probably not valid because it has been found that Rh negative persons almost never produce anti C or anti E unless they produce anti D as well. However, it is a good plan to type Rh negative donor blood for these other factors so that it will not be given to an Rh negative recipient. It is also a good idea to have on hand completely typed cells to aid in identifying the cause of a sensitivity in a patient.

It is wise to test the serum of all Rh negative donors, or at least all who have borne children or had transfusions, for the presence of antibody for the D factor. This can be done by using known D positive cells in an indirect Coombs test with the serum, or by performing a high protein crossmatch with such cells and serum.

UNIVERSAL BLOODS

As pointed out earlier, there is really no such thing as a universal blood. Therefore, "universal" blood should not be given unless there is no other blood on hand for a life-saving transfusion.

There are a number of ways of choosing which O bloods are safe to use as universal in recipients of other groups. A common method is to determine the titer of anti A and anti B in the donor's serum. If the donor's serum will still agglutinate A and B cells when diluted 1:200, it is usually considered unsafe for universal transfusion.

However, if a large supply of universal blood is needed, human blood group substances are available which have the ability to neutralize saline anti A and anti B.²⁰ After the addition of neutralizing substances the serum should be tested by means of the indirect Coombs test for immune antibodies. If these are present, the blood is not used for universal donations.

Some workers feel that the immune antibodies are the most dangerous, and that all universal bloods should be neutralized and tested for immune antibodies.²⁸

If there is still doubt about the safety of an O blood and it is imperative to give a transfusion, the safest procedure is to draw off the plasma and give only the packed cells.

To insure that a safe supply of universal blood is available, all O bloods should be titered and labeled accordingly in advance. Then, in an emergency, there will be no delay in giving a transfusion. If the blood bank is big enough, some low titer (1:200) bloods can be put aside, reserved for emergencies only.

AB patients can be considered to be universal recipients. It is better to give them A or B blood rather than O because A and B bloods have only one antibody, and usually they have a lower titer of each antibody than O blood. If this is done, the sera of these bloods

should be titered just as is done with O blood, and the same rules apply.

TYPING OF PATIENTS

At the Beth Israel Hospital, a tube of blood is drawn from each patient entering the hospital who is in any way a likely candidate for a transfusion. The blood is then sent to the blood bank and routine tests for ABO and Rh groups are done, including serum testing for the ABO system. It is not considered necessary to do more than the routine test for the D factor unless the patient has a known sensitivity to one of the other Rh factors. The results of the tests are then recorded in the patient's record on the ward and on a separate file card for each patient at the blood bank. (Fig. 3) The labeled blood is then put in the refrigerator and saved for future crossmatching.

BETH ISRAEL HOSPITAL
BLOOD GROUPING CARD

Name: Date:
Last (PLEASE PRINT) First
Hosp. No. Room Service
Blood Group Serum Group
Rh Type: Rh^o (D) Rh Subtype
Group & Rh (Finger Blood)
Method & Mfr.
Tested by

FIG. 3. On this card is recorded the results of all laboratory work done on patients who are potential recipients.

After the routine testing, the blood bank technician goes to the patient and performs a test for ABO and D on blood drawn from a finger puncture. It cannot be emphasized too greatly how important this procedure is. Fatalities have been reported because a nurse or house officer drew three or four bloods on the ward and then mixed up the labels. At the Beth Israel Hospital no patient is considered typed until this procedure is done. No exceptions are allowed. Not many hospitals do this, but the author thinks it would be a wise idea if it were adopted wherever blood bank technicians do not do their own venesections.

CROSSMATCHING

The object of a crossmatch is to determine whether or not the patient's and donor's bloods are compatible. Two bloods are compatible if there are no antibodies in the serum of either one which will coat the red cells of the other, causing hemolysis in vivo or agglutination in vitro. In addition, there should be no factor in the donor's cells which should be antigenic for the recipient. Except for the ABO and Rh testing, we do not test

for any possible antigens and crossmatching cannot pick them up unless the recipient is already sensitive.

Because of the many varieties of antibodies, it is clear that just mixing a few drops of each blood and looking for agglutination is not sufficient. Therefore, current crossmatch procedure attempts to expose all of the possible antibodies.

In order to have the proper concentration of reactants, the sera and cells are tested separately. The major side of the crossmatch is a mixture of donor's cells and recipient's serum. This is the most important part of the cross match for reasons explained earlier in the first section on universal bloods. No agglutination should ever be allowed on the major side of the crossmatch. The minor side of the crossmatch is a mixture of the donor's serum and recipient's cells. In ordinary procedures, there should be no agglutination here either. However, when crossmatching with universal blood, the minor side will always show agglutination and in this one instance it can be ignored.

It is necessary to use two matching procedures to reveal both saline and immune antibodies which require incubation. Most blood banks perform a saline crossmatch which can be read immediately and a high protein crossmatch which must be incubated at 37°C for twenty minutes to an hour. Other blood banks use two high protein crossmatches, one without incubation. This procedure makes emergency transfusions safer because the cold crossmatch will pick up at least some of the immune antibodies and one does not have to wait for the incubated sample.

A still better procedure being adopted by many blood banks is to do either a saline or high protein crossmatch without incubation and an indirect Coombs test for the second part of the crossmatch. An indirect Coombs test will reveal every antibody that is not revealed by either of the other two tests, including the atypical immune antibodies which never produce agglutination.

One of the most important parts of the crossmatch procedure is the paper work. There must be a fool-proof method of identifying which blood has been reserved for each patient. The Beth Israel Hospital uses the following system, which has proved quite satisfactory:

When it is decided that a patient needs blood, the form seen below (Fig. 4) is sent to the blood bank with the patient's name and number on it. The card bearing the patient's blood data is withdrawn from the file and his blood type is read from the card. The technician then goes to the file of grouped donor bloods and withdraws a card which identifies a blood of the same type. Then the patient's and donor's pilot tubes are withdrawn from the refrigerator and the bloods are crossmatched. If the crossmatch is successful, the number of the donor blood is recorded on the form sent from the ward. One half of this form is pasted into the patient's record and the other half is kept in the blood bank records. In addition, the patient's name, number and ward are recorded on the donor information card. (Fig. 2b)

When it is decided that a patient needs blood, the house officer or nurse looks in the patient's record and finds the number of the donor blood reserved for the patient. He then goes to the blood bank, finds the donor information card with that number, and confirms that the blood is reserved for that patient. He is then allowed to go to the refrigerator and remove the blood with the same number as that on the two forms which he has seen.

Frequently, there is more than one patient in the hospital in need of a transfusion. If one person is assigned to administer blood to all patients, it is a good idea to give only one transfusion at a time to avoid confusion. The Beth Israel Hospital makes it a rule never to allow more than one blood at a time to be taken from the refrigerator. In this way, it is impossible to pick up the wrong blood from the table after filling

Patient's Name (Last Name First) Room Hosp. No.		Beth Israel Hospital Boston 15, Mass. Blood Bank Crossmatch Request	Patient's Name (Last Name First) Room Hosp. No.	
Doctor Service			Doctor Service	
DATE			DATE	
DO NOT WRITE BELOW THIS LINE			DO NOT WRITE BELOW THIS LINE	
Patient Compatible With Blood No.			Patient Compatible With Blood No.	
GROUP	Test Method Standard <input type="checkbox"/>		GROUP	Test Method Standard <input type="checkbox"/>
RH.			RH.	
Tested By Outdates After			Tested By Outdates After	

FIG. 4

out the forms. If more than one person administers blood at a time only one at a time should be allowed to remove blood from the refrigerator. The next person should be made to wait until the first one has left the blood bank with the blood before proceeding to the refrigerator.

ADMINISTRATION OF BLOOD AND TRANSFUSION REACTIONS

There are a number of rules which should always be followed when transfusing a patient. The most important rule is to stay with the patient during the first 50 ml. A transfusion is a hazardous procedure in spite of all precautions.

There are four types of reactions, namely hemolytic, allergic, pyrogenic, and circulatory overload. A hemolytic reaction is usually accompanied by chills, pains in the chest, back and extremities, and difficulty in breathing. Any or all of these symptoms may occur. A suspected hemolytic reaction may be proven by finding free hemoglobin in the patient's serum and an increased Serum Bilirubin (Direct or Rapid type). Allergic reactions are usually accompanied by common allergic phenomena, such as hives, edema, or asthmatic attacks. The cause of most of these reactions is poorly understood. Pyrogenic reactions are accompanied by chills and fever, usually of a transient nature. They are usually caused by chemical or bacterial contamination. With modern methods of sterilization and the introduction of disposable equipment, the number of pyrogenic reactions has been reduced considerably. Most of those which now occur are mysteries. If the blood is heavily contaminated, a prolonged shock-like state usually occurs.

Whenever one of the above reactions occurs, there should be a careful search for the cause which often leads to information about the patient's ability to receive more transfusions. If a hemolytic reaction occurs, a sample of the recipient's blood and the blood used should be crossmatched, including an indirect Coombs test. Also, a careful check should be made to ascertain if there has been a clerical or handling error so that future errors of this sort may be prevented.

If a pyrogenic reaction occurs, a sample of the donor blood should be cultured. If bacteria grow, a thorough check of the blood bank's aseptic precautions should be instituted.

Whenever the signs of one of the above reactions appear, the transfusion must be stopped to prevent further harm.

RATE OF INFLOW

Thought should be given to the rate of inflow of blood during a transfusion. Patients have been lost because of a too slow or too rapid flow rate.

If a patient is in dire need of blood because of severe hemorrhage, it will not do to give blood in leisurely fashion. It may be necessary literally to pump in the blood. Pumps are available for bottles and manual squeezing is sufficient with plastic bags.

Conversely, if a cardiac patient or a patient with lung disease is in need of a transfusion, too rapid transfusion may overload the circulatory system so that cardiac failure ensues. All such patients should be carefully watched during the course of a transfusion for signs of pulmonary edema, rapid pulse and shock.

CLOTS

Blood mixed with ACD anticoagulant has a tendency to form small fibrin clots on standing. Because of this, it is necessary to filter all blood during a transfusion. Modern commercial disposable transfusion kits have built-in filters, so that the system remains closed.

MIXING OF BLOOD WITH FOREIGN SUBSTANCES AND OTHER BLOODS

It is tempting to inject medications into the blood or donor sets to avoid injecting the patient again. This practice is dangerous, because many substances hemolyze red cells or denature blood proteins, leading to serious transfusion reactions. If there is a valid reason for conserving veins, a Y-tube intravenous kit can be used. Then, the flow of blood can be stopped, the cannula flushed with isotonic saline, and the drug injected. The flow of blood may then be resumed.

The same donor kit may be used to give more than one transfusion. However, if more than one type of blood is given to a patient (e.g. to a universal recipient) the bloods will react with each other. In this instance, separate transfusion kits must be used.

ANCILLARY SERVICES OF THE BLOOD BANK

A modern blood bank offers the physician many services other than easy transfusion of stored whole blood. Simple techniques are now available for separating blood into its component parts. This allows the blood bank to use its supply of blood more efficiently and the physician to treat many cases by transfusion in which whole blood is either unnecessary or contraindicated.

PACKED RED CELLS

As mentioned previously, transfusion of a cardiac or pulmonary patient with whole blood is dangerous because of the possibility of overloading the circulatory system. The administration of packed red cells is a convenient way of lessening the risk of transfusion for such a patient. It is also a valuable technique in the treatment of a severely anemic patient who has an adequate blood volume and supply of colloids, but who needs a large volume of multiple transfusions.

Packed red cells may be prepared either by allowing the red cells to settle naturally, or by centrifuging the blood. After the red cells are packed at the bottom of the bottle or bag, the plasma is drawn off. If a bottle is used, the plasma must be vacuum aspirated into an evacuated bottle. If a plastic bag is used, gentle squeezing of the bag is sufficient to push the plasma into

another bag. The plasma may then be saved for freezing. If the red cells were centrifuged, they must be resuspended in isotonic medium before being administered. If they were allowed to settle, they may be administered as is. Great care must be taken to prevent bacterial contamination during the separation process. Packed red cells must be compatible with the recipient's blood although O cells may be given to anyone if there is a shortage of other types.

PLASMA

There are a number of conditions in which the patient suffers a lack of fluid and blood colloids, but has an adequate supply of red blood cells. The chief examples of this are non-hemorrhagic shock and extensive burns. In both of these cases an abnormally high hematocrit is a frequent finding, and the administration of whole blood is not necessary. Every blood bank should have on hand a supply of plasma for such patients. A ready source of plasma is the supernatant from packed cells and outdated blood. A well-run blood bank should always salvage plasma to store for emergency use, and the above two conditions are usually emergencies.

As with red cells, type specific plasma should always be used if possible. However, AB plasma can be given to all patients.

Many blood banks have pooled large batches of plasma. This was done also on a large scale by the Red Cross and armed forces during World War II. This practice may be unsafe because of possible widespread dissemination of homologous serum hepatitis. Each unit of plasma should be given individually, so that only one patient can ever receive the plasma of a given donor. Only in this way can the incidence of serum hepatitis due to plasma transfusions be reduced.

FRESH FROZEN PLASMA

Ordinary plasma is unsuitable for the treatment of persons afflicted with disorders of the clotting mechanism, such as hemophilia. Many of the clotting factors are extremely labile and rapidly disappear in blood kept at room or refrigerator temperatures. It is a great convenience to have stores of fresh frozen plasma at the blood bank so that one does not have to depend upon the availability of donors when a hemophiliac appears with a bleeding crisis. Fresh, frozen plasma is made by freezing plasma that is less than six hours old, or preferably, four hours old. If kept at less than -18°C , it retains its physiologic activity for as long as five years.

FRESH WHOLE BLOOD

There are three groups of disorders in which fresh, whole blood must be used for transfusions if whole blood is needed. These are bleeding disorders, in which either one of the chemical factors is missing, such as hemophilia, or in which the platelets are reduced, such

as thrombocytopenic purpura. In hypoplastic anemias, red cells are needed which are long lasting. The same is true in erythroblastosis fetalis. The blood bank should have a list of voluntary and/or professional donors who are willing to supply blood on short notice for such patients.

PLATELETS

It is often difficult to supply enough platelets to a patient with a severe platelet deficiency with one whole blood transfusion. Therefore, techniques have been devised for separating platelets from whole blood.²¹ In this manner, the platelets from a number of donors may be collected, pooled, and given in concentrated form. Platelets are, however, extremely labile so that fresh blood is needed for the separation procedures. In addition, non-wettable surfaces must be used in the collection, such as plastic bags and tubing or silicone-coated glass. Ordinary glass is entirely unsuitable and should never be used if a high yield of platelets is desired in either platelet or whole blood transfusions.

OTHER PREPARATIONS

In addition to the above facilities, which every well-run blood bank should supply, there are a number of other derivatives of blood, commercially available, which offer convenience, but which are not essential.

Normal human serum albumin is available in concentrated form. It comes as a 25% salt poor solution, and 100 ml. is equivalent to 500 ml. of citrated plasma. It is useful in the treatment of shock and burns. Its only real advantage over plasma is that it is free from virus of homologous serum hepatitis. Unfortunately, it is very expensive, and so it is now little used.

Plasma and a few of its fractions are now commercially available in dried form. Whole plasma and whole fresh plasma for hemophiliacs are both available. Purified fibrinogen is also now being made for the treatment of patients with fibrinogen deficiency. These materials need only be dissolved in sterile distilled water for administration. Their advantage lies in the fact that their concentration may be varied so that large quantities of colloids may be given with only a relatively small volume of fluid.

OBSTETRICS

The presence of a blood bank means that there is available to the physician practicing obstetrics an experienced technician to aid him in the study of mothers who are suspected of producing infants with hemolytic disease of the newborn. The typing and antibody detection services of the blood bank give the physician a chance to be prepared for an erythroblastic baby and thus decrease the infant death rate due to this disease. It is a wise idea to determine the blood type of all women the first time they are seen for obstetrical purposes. If a woman is found to be Rh negative, she and her husband should be tested further. The incidence

of erythroblastosis fetalis is one in every 200 births, and one in every 26 births in which the woman is negative and the husband positive. The incidence of the disease is high enough to make routine testing of all pregnant women worthwhile.²²

SUMMARY

This paper discusses blood banking and transfusions with their immunohematologic bases and practical applications. Its purpose is to acquaint the practicing physician with accepted procedures of testing and cross-matching blood, emphasizing the techniques used to insure the safety of the patient. The theoretical basis of blood banking is explained, including a discussion of the ABO groups, the Rh system, and the different types of agglutination which occur.

In addition, ancillary services of a blood bank are mentioned, whereby it offers the physician services other than the easy transfusion of stored blood. Mention is made of the use of packed red cells, plasma and other fractions of human blood such as albumin, antihemophilic plasma and fibrinogen.

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Continued on page 198

A New Amniotome*

WILLIAM M. SHUBERT, M.D.**

In recent years the incidence of elective amniotomy has increased sharply. Although the merit of this procedure, done wisely, has been established, the technique has often included improvised use of instruments not inherently safe when used for such purpose.

With safety and convenience in mind, a new instrument has been designed specifically for amniotomy and

is herewith presented. This instrument is composed of a cutting head mounted on a flexible shaft with a directional handle. The shaft passes through a sheath which is recessed to accommodate the cutting head, and the sheath is held securely to the operating finger by clips.

The advantages of this instrument can be enumerated as follows:

1. Only slight lateral motion of the finger tip is required, rather than thrust and/or gripping with an instrument tip remotely located from the hand.

2. There is no discomfort or awkwardness during

*Patent pending.

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FIG. 1.

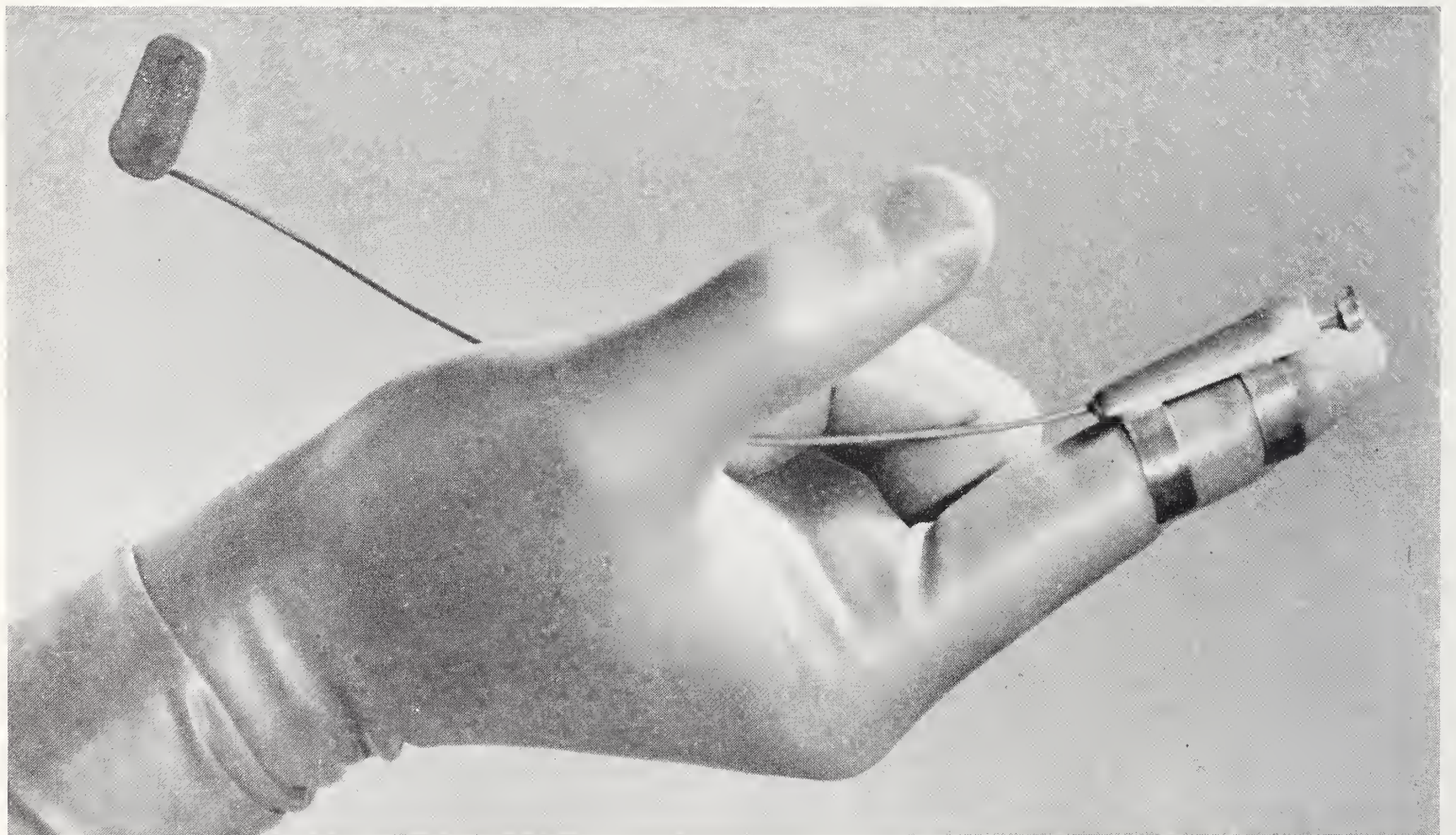


FIG. 2.

examination with the instrument clipped to the examining finger.

3. Intravaginal positioning and manipulation are facilitated by the flexible shaft and are atraumatic, due to the protecting sheath.

4. Amniotomy can be done immediately upon completion of examination (Fig. 1).

5. The cutting head is always in firm contact with the impelling finger tip, giving a good "proprioceptive" sense.

6. With directional handle, the cutting head can be rotated 180 degrees in the protecting sheath before it is advanced to the finger tip for lateral motion in a chosen direction.

7. Even with the cutting head advanced to operating position adjacent to the finger tip, the sheath still offers protection to tissue by its relationship to the cutting head.

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SPECIAL ARTICLE

The World Medical Association Needs You

MARTYN A. VICKERS, M.D.*

Membership in the United States Committee of the World Medical Association offers every American physician the opportunity to play a direct, personal role in the world wide affairs of organized medicine.

In these times, when mutual understanding among the peoples of the world seems to be the only road to peace, when there is instantaneous communication and overnight travel between continents, medicine is recognized as a universal language that may help to mend the ills of the body politic, just as it is mending the ills of the individual.

The 5000 leaders of American medicine who now comprise the U. S. Committee of W. M. A. recognize the fact that it is just as important for them to be members of medicine's international society as it is to support their county, state and national medical organizations.

W. M. A. has formulated an International Code of Medical Ethics together with a modified Hippocratic Oath defining the ideals and obligations of physicians. W. M. A. has also set forth the basic principles that should protect the rights and status of doctors in all governmental social security or health insurance schemes. W. M. A. has done more than give lip service to these ideals, codes and principles. It is working day and night around the world to protect the profession and wherever it is threatened by political interference or regulations that would prevent the doctor from serving his patients according to the dictates of his scientific knowledge and his own conscience. More recently,

W. M. A. has been endeavoring to protect the rights of medicine and the medical profession against the attempts of various non-medical organizations to draft a code of international medical law.

American physicians are singularly fortunate in having met their most pressing domestic, social and economic problems by voluntary action, thus turning back the threat of political domination. Our favored position only emphasizes our responsibility for leadership in the fight to preserve the principles of good medical practice for our colleagues abroad, and to help them restore these principles wherever they have been compromised.

American physicians who have participated in W. M. A. affairs have been impressed with the fact that doctors the world over hold the same basic ideals and cherish the same hopes and aspirations for medicine. W. M. A. has provided a new sense of solidarity and strength by bringing physicians together for the solution of their common problems.

One of the many tangible benefits of membership in the U. S. Committee (or any of the national "supporting committees") is the privilege of attending the Annual Assemblies of the World Medical Association as an Official Observer. The 11th General Assembly will be held in Istanbul, Turkey, from September 29 to October 5, 1957. It is expected that a large number of U. S. Committee members will be present, many of them combining attendance at the Assembly with a tour of European centers of medical interest. If any of you are interested in attending, kindly contact me. I will personally see to it that you are aided in every possible way in making your arrangements and handling the various details of the trip.

*Bangor, Maine, State Chairman of the United States Committee of the World Medical Association.

The W. M. A. Secretariat assists members of the U. S. Committee in making arrangements for their foreign travel, providing information on foreign medical meetings, introductions to medical leaders and teachers abroad, and promoting to the utmost the international friendships and contacts of physicians.

Membership in the U. S. Committee also brings you the "World Medical Journal," published every other month by W. M. A. This magazine, edited by Austin Smith, M.D., who is also Editor of J.A.M.A., is the only world-wide medium designed to keep you informed of medical progress and problems in all the 53 countries whose national medical associations comprise the membership of W. M. A.

W. M. A. is speaking for you and working for your interests in its contacts with other world organizations concerned with health or medical care, such as the World Health Organization (W.H.O.) of the United Nations, the International Labour Organization (I.L.O.), the International Social Security Association (I.S.S.A.) and the International Committee of the Red Cross. The contacts with these and other organizations assure you that your needs and principles will be represented and supported in negotiations that may be of vital concern to you.

Some of the other activities and accomplishments of W. M. A. of interest to every American physician are:

Sponsorship of the First World Conference on Medical Education in London in 1953 and the second such conference to be held in Chicago in 1959;

Promotion of international exchanges of medical students and teachers, lectures and clinical teaching by traveling teams of physicians;

Development of an international program to improve occupational health services;

Promotion of an ever freer flow of proven therapeutic agents throughout the world by urging removal of unwarranted trade restrictions and arbitrary licensing requirements in certain countries;

Promotion of medical research, by promoting national pharmacopoeias and defending the rights of individuals discovering new drugs and agents to name them;

Development of an international emblem (in conference with the International Committee of the Red Cross and International Committee on Military Medicine and Pharmacy) for identification and protection of medical units and civilian physicians engaged in civil defense in war time; and promulgation of regulations stating the rights and duties of such physicians;

Formulation of plans for a central repository of medical credentials, to enable qualified physicians of every country to file proof of their identity qualifications with a safe and authoritative international source;

Conducting useful studies of many subjects of world-wide interest to physicians, such as post-graduate medical education, hospital facilities, cult practices, medical advertising, and effects of social security legislation on medical practice.

The World Medical Association will bring you solid benefits as well as the satisfaction of taking part in the international affairs of our profession. You can help its work to be more effective and useful to all of us by joining the U. S. Committee. The nominal dues of Active Membership in the U. S. Committee are only \$10.00 each year. The Committee is seeking to double its present membership of 5000 American physicians this year. The objectives of W. M. A. are your objectives. It is your voice in world medical affairs. We invite you to add your name and your voice in guiding and strengthening this great organization.

BLOOD BANKING AND TRANSFUSIONS — *Continued from page 195*

1945. Coombs, R. R. A.; Mourant, A. E., and Race, R. R.: In vivo isosensitization of red cells in babies with haemolytic disease, *Lancet* i:264, 1946.

20. Witelsky, E.; Klendshoj, N. C., and Swanson, P.: Preparation and transfusion of Safe Universal Blood, *J.A.M.A.* 116:2654, 1941.

21. Klein, E.; Arnold, P.; Earl, R. T., and Wake, E.: A practical method for the aseptic preparation of Human Platelet Concentrates without loss of other blood elements, *New Eng. J. Med.* 254:1132, 1956.

22. Mollison, P. L.; Mourant, A. E., and Race, R. R.: The Rh blood groups and their clinical effects, *Medical Research*

Council Memorandum #27, Her Majesty's Stationery Office, London, England, 1952. Levine, P.; Vogel, P., and Rosenfield, R. E.: Hemolytic disease of the Newborn, *Advances in Pediatrics*, Vol. 6; Chicago, Year Book Publishers, 1953. Mollison, P. L., and Walker, W.: Controlled trials of treatment of Hemolytic disease of the newborn, *Lancet* 2:429, 1952. Diamond, L. K.: Erythroblastosis Fetalis or hemolytic disease of the Newborn, *Proc. Roy. Soc. Med.* 40:546, 1947.

26 Concord Avenue
Cambridge 38, Mass.

Program

104th Annual Session

Maine Medical Association

Sunday - Monday - Tuesday

JUNE 23, 24, 25 — 1957

The Samoset

Rockland, Maine



Program Arranged by the Scientific Committee

LLOYD BROWN, M.D., Bangor, *Chairman*

EDWARD G. ASHERMAN, M.D., Portland

RICHARD H. DENNIS, M.D., Waterville

Information

Registration:

Registration Headquarters throughout the Session will be in the Lobby at The Samoset.

Sunday, June 23 - 9:00 A.M. to 5:30 P.M.

Monday, June 24 - 8:00 A.M. to 5:30 P.M.

Tuesday, June 25 - 8:00 A.M. to 5:30 P.M.

Papers:

All papers read before this Association will be its property for publication in The Journal of the Maine Medical Association and when read shall be deposited with the Secretary, Esther M. Kennard.

Visiting Delegates:

Introduction of Visiting Delegates will take place at the General Assembly, Monday afternoon, June 25 at 4:00 P.M.

Technical Exhibits:

A list of Exhibiting Companies and representatives is published in this issue of The Journal. Save your orders for the Exhibitors at this Annual Session.

Door Prize:

A door prize will be presented at the Clam Bake on Tuesday, June 25. Don't fail to get your ticket at the Association's Registration desk.

Sunday, June 23

10:00 A.M. First Meeting of the House of Delegates

12:30 P.M. Luncheon

2:00 P.M. Reference Committee Meetings

4:00 P.M. Second meeting of the House of Delegates

6:30 P.M. Dinner

Speaker: RONALD BRIDGES, Sanford, Me.

Monday, June 24

Program on Mass Casualty Care sponsored by the Maine Chapter, American College of Surgeons and the Maine Medical Association.

9:00 A.M. TO 12:00 NOON

Presiding—CHARLES W. STEELE, M.D.

The Influence of the Advent of Atomic Weapons on Our National Life

MAJOR GENERAL SILAS B. HAYS—The Surgeon General, Department of the Army

Atomic Weapons as Casualty-Producing Agents

LIEUTENANT COLONEL JAMES T. BRENNAN—Radiological Service, Department of

Radiology, Walter Reed Army Medical Center

Casualty Estimation and Organization for Care in Mass Disaster

LIEUTENANT COLONEL ARTHUR STEER—Deputy Director, Walter Reed Army Institute of Research, Walter Reed Army Medical Center

12:00 NOON TO 2:00 P.M.

Intermission for Luncheon

2:00 P.M. TO 4:00 P.M.

Presiding—LLOYD BROWN, M.D.

The Necessary Modifications of Medical Standards for Mass Casualty Care

COLONEL JOSEPH R. SHAEFFER—Chief, Department of Atomic Casualties Studies, Walter Reed Army Institute of Research, Walter Reed Army Medical Center

The Impact of Atomic Weapons on Mass Psychology and Behavior

COLONEL ALBERT J. GLASS—Chief Consultant to The Surgeon General in Neuropsychiatry, Office of The Surgeon General, Department of the Army

Hospital Organization for Mass Casualties

EDWIN G. WILLIAMS, M.D., Medical Director, Chief, Special Weapons Protection Branch, Division of Hospital and Medical Facilities.

4:00 P.M. General Assembly

Election of President-elect

Introduction of Out-of-State Delegates; President, Maine Dental Society and President, Maine Pharmaceutical Association

President's Address, ARMAND ALBERT, M.D.

6:30 P.M. Cocktail Party sponsored by Pfizer Laboratories, Division of Chas. Pfizer & Company Annual Banquet

Presentation of Honorary Pins

Speaker: J. ROGER DEAS

Sponsored as a public service of American Can Company

Subject: **The Miracle of America**

Tuesday, June 25

9:00 A.M. TO 12:00 NOON

Presiding—EDWARD G. ASHERMAN, M.D.

Oral Hypoglycemic Agents in the Treatment of Diabetes

ALEXANDER MARBLE, M.D., Joslin Clinic, Boston, Mass.

Sponsored by the Upjohn Co.

The Bingham Associates Program for Medicine in Maine

GEORGE W. DANA, M.D., Medical Director, Bingham Associates Fund and New England Center Hospital

The Care of Retarded Children

PETER W. BOWMAN, M.D., Superintendent, Pineland Hospital and Training Center

Virus Infection

T. F. MCNAIR SCOTT, M.D., Childrens' Hospital of Philadelphia

Sponsored by State of Maine Division of Maternal and Child Health

Subject: Responsibilities of Medical Examiners

12:30 P.M. Luncheon Meetings:

M.M.A. Eye Section

Speaker: TAYLOR SMITH, M.D., Boston

Subject: **Fundus Lesions — Histopathology in Relation to Clinical Findings**

Maine Radiological Society

2:00 P.M. Business Meetings:

Maine Chapter — American College of Surgeons

Pediatric Group

Maine Cancer Society

Maine Society of Anesthesiologists

4:00 P.M. Non-Surgical Specialty Group

Special Notices**Golf Tournament**

Francis A. Winchenbach, M.D., Bath, Chairman

Election of President-Elect

The election of a President-Elect will take place at the General Assembly, Monday, June 24th, at 4:00 P.M.

Election of Councilors

Election of Councilors for the following Districts will take place at the Second Meeting of the House of Delegates on Sunday, June 23 at 4:00 P.M.

First District

(Cumberland, York)

Second District

(Androscoggin, Franklin, Oxford)

Honorary Medals

Presentation of the Association's Honorary Medals will be made by Dr. Armand Albert, President, at the Annual Banquet, Monday evening, June 24th, at 6:30 P.M.

Fifty-Year Pins

Fifty-Year Lapel Pins will be presented to the following members who were graduated from Medical School in 1907:

Cumberland County

Roland B. Moore, M.D., Portland

Kennebec County

Napoleon Bisson, M.D., Waterville

Charles H. Newcomb, M.D., Clinton

Maurice A. Priest, M.D., Deland, Florida

Lincoln-Sagadahoc County

Ardenne A. Stott, M.D., Bath

York County

Joseph R. LaRochelle, M.D., Biddeford

Sixty-Year Pins

A Sixty-Year Pin will be presented to the following member who received his Fifty-Year Medal in 1947:

Androscoggin County

Ward J. Renwick, M.D., Auburn

12:30 P.M. Luncheon

2:00 TO 4:00 P.M.

Maine Medico-Legal Society

Speakers: FRANK STRATTON, Chemist for Medical Examiner's office, Boston, Massachusetts

Physical Evidence in Criminal Investigation with pictures

JAMES P. ARCHIBALD, Houlton Maine — Judge of the Maine Superior Court

Some Practical Aspects of the Medico-Legal Relationship

6:30 P.M. Clam Bake

Specialty Group Meetings**Sunday, June 23**

12:30 P.M. Luncheon Meeting

M.M.A. Civil Defense Committee

3:00 P.M. Business Meeting

Maine Heart Association

Monday, June 24

12:30 P.M. Luncheon Meeting

Maine Chapter — American Academy of General Practice

Tuesday, June 25

10:00 A.M. Maine Medico-Legal Society Annual Meeting

Speaker, RICHARD C. WADSWORTH, M.D., Bangor

COUNTY DELEGATES — 1957

FIRST DISTRICT

Cumberland County Medical Society

Delegates:

(2 years)

Joseph B. Earnhardt, M.D., 55 Stroudwater St., Westbrook
 Philip S. Fogg, Jr., M.D., 27 Deering St., Portland
 C. Philip Lape, M.D., 131 Chadwick St., Portland
 Daniel P. Storer, M.D., 12 Deering St., Portland

(1 year)

Saul R. Polisner, M.D., 143 Vaughan St., Portland
 Barron F. McIntire, Jr., M.D., 13 W. Elm St., Yarmouth
 Clifford W. Gates, M.D., Flaggy Meadow Road, Gorham
 Francis X. Mack, M.D., 144 State St., Portland

Alternates:

(2 years)

Louis Bachrach, M.D., 16 Union St., Brunswick
 Lawrence Crane, M.D., 265 Western Promenade, Portland
 Henry B. Finks, M.D., 73 Deering St., Portland
 Laban W. Leiter, M.D., 175 Vaughan St., Portland

York County Medical Society

Delegates:

James H. Macdonald, M.D., 103 Main St., Kennebunk
 Carl E. Richards, M.D., 34 Winter St., Sanford
 Roger J. P. Robert, M.D., 331 Main St., Saco

Alternates:

Melvin Bacon, M.D., 257A Main St., Sanford
 Robert F. Ficker, M.D., Maine St., Kennebunkport
 William T. Roussin, M.D., 48 Bacon St., Biddeford

SECOND DISTRICT

Androscoggin County Medical Society

Delegates:

Otis B. Tibbetts, M.D., 33 Court St., Auburn
 Daniel R. Shields, M.D., 369 Main St., Lewiston
 Ralph A. Goodwin, Sr., M.D., 56 Denison St., Auburn

Alternates:

Paul J. LaFlamme, M.D., 78 Pine St., Lewiston
 William V. Cox, M.D., 133 Court St., Auburn
 Ralph A. Zanca, M.D., 86 Pine St., Lewiston

Franklin County Medical Society

Delegate:

Philip B. Chase, M.D., 36 Main St., Farmington

Alternate:

Paul E. Floyd, M.D., 2 Middle St., Farmington

Oxford County Medical Society

Delegates:

(2 years)

Garfield G. Defoe, M.D., Dixfield

(1 year)

James A. MacDougall, M.D., 303 Penobscot St., Rumford

Alternates:

(2 years)

Dexter E. Elsemore, M.D., Dixfield

(1 year)

Walter G. Dixon, M.D., 16 Deering St., Norway

THIRD DISTRICT

Knox County Medical Society

Delegates:

William A. McLellan, M.D., 87 Chestnut St., Camden
 Harry G. Tounge, Jr., M.D., 12 Union St., Camden

Alternates:

Hugo Hochschild, M.D., 33 Main St., Thomaston
 Paul A. Jones, M.D., Union

Lincoln-Sagadahoc County Medical Society

Delegates:

John F. Dougherty, M.D., 112 Front St., Bath
 John F. Andrews, M.D., 20 West St., Boothbay Harbor

Alternates:

Ralph C. Powell, M.D., Damariscotta
 Edward L. Kinder, Jr., M.D., 1027 Washington St., Bath

FOURTH DISTRICT

Kennebec County Medical Society

Delegates:

Charles E. Towne, M.D., 18 Common St., Waterville
 Wilson H. McWethy, M.D., 31 Western Ave., Augusta
 Loring W. Pratt, M.D., 177 Main St., Waterville
 Frank B. Bull, M.D., 72 Church St., Gardiner
 Allan J. Stinchfield, M.D., 16 E. Chestnut St., Augusta

Alternates:

George J. Robertson, M.D., 33 College Ave., Waterville
 Ivan E. McLaughlin, M.D., 345 Water St., Gardiner
 Arnold W. Moore, M.D., State Hospital, Augusta
 Leon D. Herring, M.D., 1 Western Ave., Winthrop
 Richard H. Dennis, M.D., 33 College Ave., Waterville

Somerset County Medical Society

Delegate:

George E. Sullivan, M.D., R.F.D. No. 1, Fairfield

Alternate:

Howard L. Reed, M.D., 235 Madison Ave., Skowhegan

Waldo County Medical Society

Delegate:

Seth H. Read, M.D., 15 Church St., Belfast

Alternate:

George L. Temple, M.D., 18 Franklin St., Belfast

FIFTH DISTRICT

Hancock County Medical Society

Delegates:

James H. Crowe, M.D., 121 Main St., Ellsworth
 Marcus A. Torrey, M.D., 75 State St., Ellsworth

Alternates:

Philip L. Gray, M.D., Blue Hill
 Arthur M. Joost, Jr., M.D., P. O. Box B, Bucksport

Washington County Medical Society

Delegate:

Perley J. Mundie, M.D., 111 Main St., Calais

Alternate:

Robert G. MacBride, M.D., 25 Washington St., Lubec

SIXTH DISTRICT

Aroostook County Medical Society

Delegates:

Robert M. Gabrielson, M.D., 18 Sweden St., Caribou
 Harry M. Helfrich, Jr., M.D., 555 Main St., Presque Isle
 Robert A. Graves, M.D., 3 Green St., Fort Fairfield

Alternates:

Clyde I. Swett, M.D., 18 Sherman St., Island Falls
 Philip Pines, M.D., Maine St., Limestone
 Melvin R. Aungst, M.D., Morneau Bldg., Fort Kent

Penobscot County Medical Society

Delegates:

Wilbur B. Manter, M.D., 1 Fern St., Bangor
 Richard C. Wadsworth, M.D., 489 State St., Bangor
 Leonard G. Miragliuolo, M.D., 10 Maple St., Bangor
 Jay K. Osler, M.D., 74 Birch St., Bangor
 Wilfred I. Butterfield, M.D., 119 Main St., Lincoln

Alternates:

Arthur N. Lieberman, M.D., 180 Broadway, Bangor
 Hans Weisz, M.D., 196 Main St., Lincoln
 Eugene E. Brown, M.D., 276 State St., Bangor
 Hans Shurman, M.D., 10 Spring St., Dexter
 Donald E. Bridges, M.D., 263 State St., Bangor

Piscataquis County Medical Society

Delegate:

Ralph C. Stuart, M.D., Guilford

Alternate:

Linus J. Stitham, M.D., 50 Main St., Dover-Foxcroft

Program

**Woman's Auxiliary
to the
Maine Medical Association
Eighth Annual Convention**

June 23, 24, 25, 1957

The Samoset, Rockland, Maine

Sunday, June 23

1:00-5:00 P.M. — Registration

Monday, June 24

9:00 A.M.-12:30 P.M. 2:00-5:00 P.M. — Registration

10:00 A.M. Board Meeting

12:30 P.M. Luncheon

Presiding: MRS. RALPH GOODWIN, President

Greetings — ARMAND ALBERT, M.D., President, Maine Medical Association

Introduction of Guests

Election of Officers

Installation of Officers

Guest Speaker — MRS. PAUL C. CRAIG,
President, Woman's Auxiliary to the American Medical Association

Subject: **The Ways We Work Together**

Evening Programs

See the Maine Medical Association Program
on preceding pages.

Registration — In charge of Knox County Auxiliary

Co-Chairmen of Arrangements:

Mrs. James Shippee

Mrs. Edward Foote

Hostesses:

Mrs. Dexter J. Clough, 2nd.

Mrs. Armand Albert

Mrs. Vincent Beeaker

Mrs. Paul Millington

Mrs. James Shippee

Mrs. Charles Steele

Technical Exhibits

Abbott Laboratories, North Chicago, Illinois

Representatives, Mr. A. J. Mack, Mr. A. Tancredi,
Mr. W. A. Towne, Mr. J. L. Keliher

American Ferment Co., Inc., 1450 Broadway, New York 18, N. Y.

Representative, Mr. G. H. Shaw

Ames Company, Inc., Elkhart, Indiana

Representatives, Mr. Robert L. Lafond, Mr. Vincent J. Pigors

Anderson & Briggs, Inc., 24 Court St., Auburn, Maine

Representative, Mr. C. A. Briggs

Ayerst Laboratories, 340 Hudson St., Hackensack, New Jersey

Representative, Mr. Edward C. McMahon

The Baker Laboratories, Inc., 4614 Prospect Ave., Cleveland 3, Ohio

Representative, Mr. H. W. Baker, Jr.

Elmer N. Blackwell, Surgical Appliance Specialist, 207 Strand Bldg., Portland 3, Maine

Representatives, Mr. Elmer N. Blackwell, Mr. Oakley R. Sanborn

The Borden Company, 350 Madison Ave., New York 17, N. Y.

Mr. William Gordon, Advertising Manager, Prescription Products Division

Brewer & Company, Inc., 67 Union St., Worcester 8, Mass.

Representatives, Mr. Joseph C. Hearn, Mr. Walter Spaulding

Buffington's Inc., Worcester 8, Mass.

Representative, Mr. C. W. Rich

Burroughs Wellcome & Co. (U.S.A.) Inc., 1 Scarsdale Rd., Tuckahoe, New York

Representatives, Mr. C. D. Weed, Mr. R. L. McQuillan

Carnation Company, Carnation Bldg., Los Angeles 36, California

Mr. George F. Hamilton, Director, Medical Marketing

Ciba Pharmaceutical Products Inc., Summit, New Jersey

Representatives, Mr. H. W. Hackett, Mr. C. W. Leighton

The Coca-Cola Company, P. O. Drawer 1734, Atlanta 1, Georgia

DoHo Chemical Corporation, 100 Varick St., New York 13, N. Y.

Representative, Mr. Irving Hahn

Eaton Laboratories, Norwich, New York

Representative, Mr. Arthur T. Snyder

C. B. Fleet Co., Inc., 921-927 Commerce St., Lynchburg, Virginia

Representative, Mr. F. T. Keylor

Geo. C. Frye Company, 116 Free St., Portland, Maine

Representatives, Mr. Milton S. Kimball, Mr. John F. Kimball, Mr. Hubert A. Honan, Mr. Sidney F. Cheney, Mr. Irving F. Beers, Mr. Millard C. Webber, Jr., Mr. Claude W. Lamson

Hoffmann-LaRoche Inc., Roche Park, Nutley 10, New Jersey

Mr. W. M. Monday, Sales Promotion Manager

Holland Rantos Company, Inc., 145 Hudson St., New York 13, N. Y.

Representatives, Mr. Phillip L. Frank, Mr. Milton Hart

Lederle Laboratories Division, American Cyanamid Company, Pearl River, New York

Representative, Mr. Rocco Maffei

Eli Lilly and Company, Indianapolis 6, Indiana

Representatives, Mr. W. W. Tulloch, Mr. E. C. Webber

E. F. Mahady Company, 851-859 Boylston St., Boston 16, Mass.

Representatives, Mr. Charles G. Perkins, Mr. Paul Joyce

Maine Surgical Supply Company, 233 Vaughan St., Portland, Maine

Representatives, Mr. John H. Lacy, Mr. Robert Axelson, Mr. Phil Richmond

The Wm. S. Merrell Company, Cincinnati 15, Ohio

Representatives, Mr. Joseph Crozier, Mr. Kenneth McConnell

Milex of New York, 45-45 44th St., Long Island City 4, New York

Representative, Mr. George Sutton

The P. J. Noyes Company, Lancaster, N. H.

Representatives, Mr. Louis E. Bragg, Mr. Vernon L. Keene, Mr. Michael Salvetti

Parke, Davis & Company, Detroit 32, Michigan

Mr. John A. McCartney, Manager, Professional Relations

Pfizer Laboratories, 630 Flushing Ave., Brooklyn 6, New York

Representatives, Mr. Leonard Robinson, Mr. F. Howard Stimets, Mr. Wallace Houston

Thomas W. Reed Company, 533 Commonwealth Ave., Boston 15, Mass.

Representative, Mr. John F. Walsh

A. H. Robins Company, Inc., 1407 Cummings Drive, Richmond 20, Virginia

Representatives, Mr. G. W. Wagoner, Mr. M. S. Owen

J. B. Roerig and Company, 536 Lake Shore Drive, Chicago 11, Illinois

Representative, Mr. Clarence J. Johnson

Ross Laboratories, Columbus 16, Ohio

Mr. H. O. Davis, Convention Manager

Sandoz Pharmaceuticals, Route 10, Hanover, New Jersey

Mr. H. D. Davis, Convention Manager

W. B. Saunders Company, West Washington Square, Philadelphia 5, Pa.

Representative, Mr. Joseph Juneman

Schering Corporation, Bloomfield, New Jersey

Representatives, Mr. Jack Arlaud, Mr. Floyd Selby

Sealy Mattress Company, 38-42 Everett St., Allston 34, Mass.

Mr. Edward Levenson, Contract Division

G. D. Searle & Company, P. O. Box 5110, Chicago 80, Illinois

Representatives, Mr. Harold J. Warnecke, Mr. A. L. Grimes, Mr. J. J. Pash

E. R. Squibb & Sons, 745 Fifth Ave., New York 22, N. Y.

Representatives, Mr. R. Perchard, Mr. Gray, Mr. Donegan

Surgeons' & Physicians' Supply Co., 961 Commonwealth Ave., Boston 15, Mass.

Representative, Mr. Charles H. Joy

The Upjohn Company, 17 Deerfield St., Boston 15, Mass.

Representatives, Mr. H. B. Walker, Mr. W. A. Kayatta, Mr. R. A. Clemons, Mr. J. A. Dallymple

U. S. Vitamin Corporation, 250 East 43rd St., New York 17, N. Y.

Representatives, Mr. Wm. G. Moran, Jr., Mr. John R. Winfield

Winthrop Laboratories, 1450 Broadway, New York 18, N. Y.

Mr. John J. Martocci, Convention Manager

Awards For Best Journal Articles

published during 1956-57

will be presented at the

General Assembly, Monday, June 24 at 4:00 P.M.

The Journal of the Maine Medical Association

DANIEL F. HANLEY, M.D., Brunswick, Editor

EDITORIAL BOARD

Maine Medical Association

First District, DONALD H. DANIELS, M.D.	Portland	Fourth District, JAMES E. POULIN, M.D.	Waterville
Second District, WALDO A. CLAPP, M.D.	Lewiston	Fifth District, MARCUS A. TORREY, M.D.	Ellsworth
Third District, RALPH P. EARLE, M.D.	Vinalhaven	Sixth District, RICHARD C. WADSWORTH, M.D.	Bangor

Maine Hospital Association

FREDERICK T. HILL, M.D., Waterville

PEARL R. FISHER, R.N., Waterville

Across The Desk

Apropos of Social Security

The Department of Health, Education and Welfare says more than one-half of the country's clergymen have exercised their option to be covered. April 15 was the deadline for their applications for inclusion. Note: Congress members and committees continue to receive letters and petitions from individual physicians and medical groups requesting social security benefits for M.D.'s.

Typical Doctor Works Sixty Hours a Week, Magazine's Survey Shows

"For every eight hours the typical American works, the typical physician devotes twelve hours to the practice of medicine." So reports *Medical Economics*.

Medical Students Return to Small Towns to Practice

A recent American Medical Association report says that medical students who were born and raised in small communities usually go back to small towns after their graduation.

Also, the report says, graduates whose prior residence was in the smaller communities are less liable to limit their practice to a specialty.

The publicly-supported schools — state or municipal — draw a higher proportion of their students from smaller communities and consequently contribute comparatively more physicians to the smaller communities than do the private schools.

Tennessee Has Highest M.D. Graduate Record

The University of Tennessee Medical School at Memphis turned out more doctors in 1956 than any of the other 76 four-year approved medical schools in the United States.

The Tennessee school, which operates on a year-around basis and admits several classes annually, graduated 199 young M.D.'s during 1956. It was one of six schools graduating more than 150. The other five and the number of 1956 graduates were:

Michigan at Ann Arbor, 189; Jefferson at Philadelphia, 171; Illinois at Chicago, 159; Texas Medical Branch at Galveston, 151; and Harvard at Boston, 151.

A.D.A. Lobby Goes Beyond A.M.A.'s in Dollars Spent

In funds expended to influence national legislation, the American Dental Association moved ahead of the American Medical Association in 1956. The former

for
the first
time

24 HOUR SULFA THERAPY



A single dose of KYNEX provides therapeutic blood levels within the hour. Blood concentration peaks are reached within 2 hours. 10 mg. per cent blood levels persist beyond 24 hours.¹

For greater safety: low dosage, high solubility and slow excretion help avoid crystalluria.
For broad antibacterial effectiveness: KYNEX is particularly efficient in urinary tract infections due to sulfonamide-sensitive organisms, including *E. coli*, *Aerobacter aerogenes*, *paracolon bacilli*, streptococci, staphylococci, Gram-negative rods, diphtheroids and *Gr*

WITH A SINGLE (1 Gm.) DOSE

positive cocci. **For convenience:** the low dosage of 1 Gm. (2 tablets) per day offers optimum convenience and acceptance to patients.

Tablets: Each tablet contains 0.5 Gm. (7½ grains) of sulfamethoxypyridazine. Bottles of 24 and 100 Tablets.

Syrup: Each teaspoonful (5 cc.) of caramel-flavored syrup contains 250 mg. of sulfamethoxypyridazine. Bottle of 4 fl. oz.

1. Boger, W. P.; Strickland, C. S.; and Gylfe, J. M.: Antibiot. Med. & Clin. Ther. 3:378 (Nov.) 1956.


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SULFAMETHOXYPYRIDAZINE LEDERLE

*Reg. U. S. Pat. Off.

LEDERLE LABORATORIES DIVISION, AMERICAN CYANAMID COMPANY, PEARL RIVER, NEW YORK



reported a total outlay of \$55,430.22, compared to \$48,029.22 for the A.M.A. Other major lobbyists in the health field were: The American Hospital Association — \$44,545.92; The American Nurses Association — \$12,712.25; The American Optometric Association — \$8,411.73 and The American Osteopathic Association — \$3,360.28.

The Congressional Record for March 12 lists organizations that filed lobbying reports for the fourth quarter of 1956. Among larger expenditures for this 3-month period were those of the Blue Cross Commission — \$5,572.59; The Association of American Physicians and Surgeons — \$1,500; and The Alabama State Medical Association — \$2,724.99.

Congress Report Surveys Medical and Dental Training

The House Commerce Committee has published its staff report on professional education in medicine, osteopathic medicine, public health, dentistry and dental hygiene. The 480-page volume will be a valuable reference work for those interested in the training of doctors, financing of their education and geographical distribution. It was prepared primarily as a guide to Congress, to help its members decide whether further extension of the Federal role in professional education is desirable. Single copies will be supplied gratis by the House Committee on Interstate and Foreign Commerce. A few sample findings are as follows:

Schools of Medicine

A sharp increase in the number of applicants in the next 10 years is anticipated. Eighty-three schools report they should spend about \$4001 million on physical improvements, provided they can get matching fund assistance. On the average, tuition covers 18 per cent of the operating expenses.

Dentistry and Hygiene

Information was obtained from 45 dental schools and 34 schools of dental hygiene. Unlike medicine, the number of dentists in proportion to the population is declining steadily. The ratio was 58/100,000 in 1930; today it is an estimated 46/100,000. Dental schools say they need about \$77 million worth of improvements.

Schools of Osteopathy

All six now in operation are privately owned and their graduating classes last year reached a new high total of 469. California, Iowa, Illinois, Michigan, Missouri and Oklahoma have the largest ratios of practicing D.O.'s. The schools plan an outlay of \$21 million for construction in the next five years.

Schools of Public Health

They number 11, five publicly owned and six under private financing and operation. During the current year, they have about 1,200 graduate and 530 undergraduate students under instruction. A \$24 million construction program is on the planning boards.

Cumulative Statistics Given on Hill-Burton Act

The latest figures on the Hill-Burton hospital expansion program, now in its 11th year, are as follows: 3,332 projects approved to date, with a total estimated cost of \$2,712,512,871; all but 301 of them are either completed and in operation (2,277) or under construction (754); the total of 146,947 hospital beds and 818 health centers are involved.

Smaller Group of Doctors to do Pilot Physicals

The Civil Aeronautics Administrator has signed an order which will make the medical certification of private pilots a more exclusive procedure. At present any physician — even chiropractors, in some jurisdictions — can give these examinations. The new C.A.A. rule will require that they be given by C.A.A.-designated examiners, of which there are some 1,800 throughout the land.

Congress Gets Report of Medical Education Fund

The House and Senate have received the audit reports of the National Fund for Medical Education showing how its money was disbursed in 1956. (Annual reports by N.F.M.E. are mandatory since it holds a Congressional charter.) Grants to medical schools last year totaled \$3,066,450, compared with \$2,657,434 in 1955. Administrative expenses increased to \$469,412 — they came to \$336,563 in 1955 — and salaries (\$230,079) constituted the largest item.

Limiting the Activity of Naturopaths

Governor Collins of Florida recently released a report which deals a heavy blow to naturopaths in that state.

The governor's report, based on an investigation which was begun last September, recommends that the Florida legislature "abolish the practice of naturopathy." It is estimated that there are about 350 naturopaths in Florida.

The 109-page report, a copy of which was received by the A.M.A. Bureau of Investigation, reviewed among other things the details of so-called schools claimed as sources of diplomas by naturopaths licensed in Florida. The report said:

"Information pertaining to naturopathic education is difficult to obtain because schools are small affairs of a fly-by-night character with few students, and several months of investigation, including correspondence and on-the-spot visiting, revealed no school which confines its teaching to naturopathy. In every instance where any type of school existed, naturopathy was nothing more than part of a course given for the training of chiropractors."

The investigator further reported:

"None of the so-called schools had even one adequately trained teacher on the faculty, for there is no naturopathic school where they could be adequately trained; none has one worthily-equipped laboratory; none conducted a clinic in which a wide variety of common diseases could be studied; none had any affiliation with a worthy hospital, and none existed where any internship, externship or preceptorship is required."

The naturopathic situation in Florida is unique since these so-called drugless healers are, by reason of judicial interpretation of licensing laws, able to dispense and prescribe narcotics and antibiotics.

Naturopaths Appealing to U.S. Supreme

Some 50 Utah naturopaths whose licenses to practice were abridged so as to remove obstetrics and minor surgery from their vocational orbit are taking an appeal to the Supreme Court. Contention is that the action was arbitrary and unjustified. In a somewhat similar case, a Maryland naturopath wants the highest tribunal to declare unconstitutional that state's Medical Practice Act. He says it violates antitrust laws by giving conventional medicine favored status as a system of healing.

Another case which the Supreme Court has been asked to review comes out of Cleveland, where two men were convicted of offering to sell medical diplomas for \$150. Chiropractors were to be the prospective buyers.

Board of Trustees Actions

At a recent meeting of the A.M.A. Board of Trustees, the following statement was adopted:

"There is complete agreement in the medical profession that high quality nursing care is an important

factor in the care of the acute and chronically ill patient.

"Over the years much emphasis has been placed on nurse recruitment and nurse education to provide qualified personnel to care for the patient.

"The Board of Trustees of the American Medical Association believes that the medical profession should interest itself in further improvement in the care of the patient. It calls to the attention of its constituent state societies the need for specific programs designed to improve patient care in their respective states.

"It is further recommended, by this Board, that the state societies give their immediate attention to this problem and in collaboration with other interested parties, especially nursing organizations, develop appropriate programs."

Educators Differ on Army Granting Graduate Degrees

Some segments of higher education are opposing an Army-backed bill giving Walter Reed Army Institute of Research the authority to award "master of science, master of public health, and doctors of science degrees in medicine, dentistry, veterinary medicine, and in the biological sciences involved in health services." The bill (H.R. 3516) already had been reported favorably by the Kilday subcommittee of the House Armed Services Committee following hearings. Then the subcommittee decided to reconsider after receiving several protests, including one from Dr. Nathan Pusey, President of Harvard University, who wrote that enactment "will surely debase the established academic currency of all American universities."

At a re-hearing March 14, the subcommittee heard from Dr. Ward Darley, who is executive director of the Association of American Medical Colleges but who spoke on behalf of the American Council on Education. He objected on the broad principle that no federal agency "standing alone" should be authorized to move into the field of higher education and grant graduate degrees. He also read a statement from T. Keith Glennan, President, Case Institute of Technology, who headed the council committee that had looked into the Walter Reed issue and had opposed the plan.

Supporting the Army were Dr. William Stone, dean, University of Maryland Medical School, and Dr. Colin MacLeod, professor of research medicine, University of Pennsylvania. They maintained the bill was designed, among other things, to attract more men into military medical careers and to supply advanced training in preventive medicine that regular institutions do not readily offer.

Committee Reports — 1956-57

STANDING

Public Relations Committee

To the Officers and Members of the Maine Medical Association:

Although widely scattered geographically, members of our committee closely approached one hundred per cent attendance at our meetings during 1956 and 1957, and at each meeting the Executive Director of the State Association attended as our guest. We interpret the success of our meetings as indicating an increasing realization by doctors of the need for maintaining constructive liaison with the public.

One of our members, Dr. Roger Robert, gave his time to attend the Annual Public Relations Institute of the American Medical Association, in Chicago, during August, 1956. His report at our first meeting formed the basis for much of our discussion and preliminary planning.

Mrs. Robert Barrett, whom we invited to attend our October meeting, convinced us of the important part of the Woman's Auxiliaries can play in any public relations program, and underlined the need for keeping the ladies better informed of the doctors' P-R goals and their plans for attaining them.

Mr. Robert Beith, Executive Editor of the Portland Press Herald-Evening Express, was our guest in February. He has been in close liaison with Doctor Hanley, at the state level, and with the Public Relations Committee of the Cumberland County Medical Society, and has exhibited genuine interest in bringing reporters and doctors together for better understanding of each other's problems.

This committee established at its first meeting certain short-term goals, principally concerned with increasing the awareness by Maine physicians of their responsibilities in building and improving public relations at the local level. Working with county societies, our members have offered assistance in such activities as the very successful weekly television program "Health Hi-lites" in Aroostook County, in which physicians from Fort Kent to Bangor have participated.

With the help of our committee, lectures to team coaches on athletic injuries have been planned in Aroostook County for the coming summer and fall; and Woman's Auxiliaries of some county societies have been offered help in setting up exhibits at certain medical meetings in New York and Boston for the purpose of acquainting young physicians with the industries,

recreational and professional opportunities, and the "good living" in the State of Maine.

With the announcement by the A.M.A. of its decision to make an all-out drive to eliminate epidemic poliomyelitis, our committee pledged itself to help each county establish its own program to achieve this goal. The Executive Director of the M.M.A. and the Maine Chapter of the National Polio Foundation deserve a great deal of credit for helping set up programs in Portland, Bangor, and other areas of concentrated population. The early set-back imposed by the national vaccine shortage does not appear to have resulted in catastrophic public relations, as we first feared, but has rather served to focus the public's interest and attention on the program. Our committee recognizes the danger of professional and public apathy, and is currently working with the National Foundation and the M.M.A. office to stimulate further development of organized programs which can be put into immediate effect when supplies of vaccine become available.

Looking toward the future, we feel that the Public Relations Committee of the Maine Medical Association will play an increasingly important role during the next few years. Although it will rely heavily on the help of the Executive Director of the Maine Medical Association to carry out any broad program, the committee should continue to establish and improve short- and long-term goals which can be effectively carried out at the county level. In addition, the Public Relations Committee might relieve the Council of burdens which occasionally arise as a result of unfavorable or inaccurate press releases, or quackery, and which may jeopardize the public health.

It is suggested that additional meetings of the Public Relations Committee might well be held in conjunction with the interim meetings of the House of Delegates of the M.M.A.

Respectfully submitted,

PAUL E. FLOYD, M.D.

ROGER J. P. ROBERT, M.D.

ROBERT J. BARRETT JR., M.D.

HARRY M. HELFRICH JR., M.D.

JOHN R. LINCOLN, M.D., *Chairman*

Health Insurance Committee

To the Officers and Members of the Maine Medical Association.

During the past year your Insurance Committee has met five times for afternoon-long sessions. Most of our time has been spent on the reappraisal of alternate Blue Shield Plans, these plans finally being accepted by the House of Delegates at its Interim Session in April.

Since all physicians have received copies of these new plans we will only note two changes in the proposed contracts. One, the definition of a consultant has been changed to read, "any physician acceptable to the patient and the attending physician who renders a formal written consultation." It is our intent here to make special allowances for the occasional area in which

a man limiting himself to a particular field may not be available. In most instances we will adhere to the above requirement for consultation since we do not wish to open the way for payment of "curbstone" consultations. Therefore the committee will review all claims for consultation payment. The second change approved by the House was to pay the non-surgical specialists an additional two dollars a day, or seven dollars for the first seven days of in-patient medical care.

The income limits on the preferred or Plan B were set by the House at \$4000 single and \$6000 family. For the first year this plan will probably only be available to large groups until actuarial experience is accumulated. Before the plan is

put into effect each participating physician will be sent a new contract for his approval or rejection as to his own participation.

As voted at last year's annual meeting our insurance committee has been enlarged to include representatives from each component society. Most of these men have attended our meetings, and have contributed much to the communal effort. And, I would like to take this opportunity to thank each and every member most sincerely.

Since more and more, Health Insurance is becoming a vital part of our practice, I feel it behooves each of us to take a personal interest in its furtherance. While there is room for both Commercial and Blue Shield plans it is my belief that by and large, our future lies with Blue Shield, for only within its framework can we control our own policies in respect to a Full Payment (or service) Plan. To me, Full Payment is the only practical manner in which the traditions of our profession can

be applied to the practical consideration of running an insurance company. Moreover, Full Payment is designed primarily for the welfare of the patient, whose interest medicine has always pledged itself to protect. Finally Full Payment is the only way by which Medicine, in the long run, can maintain itself as a voluntary profession.

Respectfully submitted,

LINUS J. STITHAM, M.D., *Chairman*

Committee Members:

LOUIS A. ASALI, M.D.	ALEXANDER W. MAGOCSI, M.D.
SAMUEL L. BELKNAP, M.D.	HAZEN C. MITCHELL, M.D.
DWIGHT CAMERON, M.D.	KENNETH W. SEWALL, M.D.
WALDO A. CLAPP, M.D.	CLYDE I. SWETT, M.D.
PAUL A. FICHTNER, M.D.	GEORGE L. TEMPLE, M.D.
ROSS W. GREEN, M.D.	HARLAND G. TURNER, M.D.
ROBERT O. KELLOGG, M.D.	FRANCIS A. WINCHENBACH, M.D.

Investment Committee

To the Officers and Members of the Maine Medical Association:

The list of securities, published elsewhere in this issue of the Journal, is the same as last year with the exception of 4 (\$1000) series G bonds which came due July 1, 1956. These were sold and upon the recommendation of H. M. Payson Company 4 (\$1000) U. S. Treasury bonds (2¾%) were pur-

chased. The net profit for our Association between the sale and purchase price was \$135.41.

Respectfully submitted,

E. R. BLAISDELL, M.D., *Chairman*

SPECIAL

Maine Committee — American Medical Education Foundation

The Sixth Annual Meeting of State Chairmen of the American Medical Education Foundation was held at the Drake Hotel in Chicago on January 27, 1957, Dr. Louis H. Bauer, President, presiding.

Doctor Bauer welcomed those in attendance who represented all but four states. Dr. Bauer announced that the Foundation has raised more this year from individual physicians than ever before, saying that "There is available for distribution \$1,072,727. If we exclude the supplementary gift that the AMA gave in December, of \$125,000, that still represents a 25 per cent increase over what the Foundation was able to do last year. If we include that gift, then it is a 41 per cent increase." As a result, each four year medical school will receive \$6,850 and each two year school half that amount. Added to this will be the designated contributions which this year reach approximately \$500,000. Since it was organized in 1951, the Foundation has given nearly six million dollars to the medical schools.

In discussing the new policy whereby AMEF no longer transfers its money to the National Fund, Dr. Bauer listed three reasons why AMEF will distribute its own funds: 1) a more satisfactory relationship with certain alumni funds would result, 2) contributing doctors would get full credit for their gifts, and 3) the initial impetus the Foundation gave the National Fund is no longer needed.

Because the AMA did not want the medical schools to suffer from the loss of matching grants by the Ford Foundation which occurred when the new distribution policy went into effect, the AMA donated an additional \$125,000 to the Foundation for distribution.

Dr. Dwight H. Murray, President of the American Medical Association, then addressed the assemblage, stressing the importance of the work of the Foundation. Dr. Murray said, "The future freedom of medical education in this country depends in large measure on the success of this entire program . . . We must recognize that control is the inevitable consequence of subsidization . . . If federal monies are disbursed, it is government's responsibility to determine how, by whom, where and when such monies are spent."

Mrs. Robert Flanders, President of the Woman's Auxiliary, speaking on behalf of more than 74,000 members, stated the women's dedication to AMEF, saying: "*Health is our Greatest Heritage* is our Auxiliary theme this year. In order to protect this heritage of everyone in our nation, and continue to have our country the healthiest in the world, we realize we must help support our medical schools and raise money for the American Medical Education Foundation." She went on to say that since the founding of AMEF the Woman's Auxiliary has contributed \$281,392.84. In 1956 the women contributed about \$106,000. The 1957 goal is \$140,000.

Dr. Edward L. Turner, Secretary-Treasurer of the Foundation, was introduced next by Dr. Bauer. Dr. Turner brought the assembly up to date by citing some current figures concerning the country's medical schools. He said that the number of medical school graduates is increasing each year. Last year the figure was 6,845; by 1960 the number of graduates is anticipated to be well over 7,000. Dr. Turner said that today medicine must compete with several other vocational fields, adding "Our immediate challenge as physicians is to be sure that we help to stimulate top-calibre youthful intellect in the direction

of medicine." Dr. Turner drew attention to the new medical schools now developing, and added Kentucky to the list, stating that Kentucky will be in a position to admit its first classes in the next year to year and a half.

Underlining the need for additional support for medical education, Dr. Turner said, "The one thing I would like to point out above all else is that tuition this last year accounted for only about 18.2 per cent of the total cost of basic medical school operating budgets." Among other problems facing the medical schools, said Dr. Turner, is the need for funds to maintain full-time faculties, the meeting of increased costs of equipment and apparatus, and at the same time the dual responsibilities of providing a basic education for young physicians along with the added emphasis in areas of research, which he termed as the "constant search for answers to unknown questions."

Mr. John Hedback, Executive Secretary of AMEF, opened his remarks with a mention of his appreciation for the way in which he and his staff had been received by the State Chairmen and Executive Secretaries when visiting across the country. In this connection he mentioned the growing enthusiasm for the Foundation and congratulated the State Chairmen for the success they achieved in 1956.

He then stressed the importance of clarifying the present position of the Foundation in relationship to the matching funds program which the National Fund had arranged with the Ford Foundation. Mr. Hedback said that it was most important to clear up the confusion that had resulted from the publicity given to this matching program and asked the State Chairmen to help in making known that there was now no matching arrangement with the Ford Foundation.

In sketching the plans for 1957 Mr. Hedback stated that his office was a clearing house for information and ideas that had been used in individual states. He urged the state committees to supply him with the material used in their various campaigns so that he could exchange these ideas with other state committees.

Four sectional meetings followed the morning session: 1) Organizing a State for AMEF, 2) Metropolitan Campaigns, 3) Treasury Gifts and Society Dues Increases, 4) Special Techniques for State Campaigns. Reports on these follow.

Dr. Frank McGlone (Colorado) was called to report on the first section devoted to "Organizing a State for AMEF." Said Dr. McGlone, "The great value of the meeting, of course, was

the discussion, and I will try to summarize the answers to the questions that were proposed in the outline." As to the size of a committee, Dr. McGlone stated that the opinion of the group was that size should correspond to the number of councilor districts in the state, that is one man from each district. He added that a committee should have continuity, not being made up fresh each year, but rather keeping some of the experienced men in office. Campaigns, said Dr. McGlone, should be carried on late in the fall for best results; however, some states found a year-round campaign to be most desirable. Others carry on their work in the period directly after Medical Education Week. In the matter of goals, no general agreement was reached, but Dr. McGlone found that in Colorado, at least, a goal of \$100 seemed to work best. Opinions as to methods used in campaigns ranged from weekly letters sent to prospects, to follow-up letters, personal contact, and direct mail. It was generally agreed that the use of assessments met with strong disapproval.

Section 2 concerned metropolitan campaigns and was reported on by Dr. Charles E. Jacobson (Connecticut). Dr. Jacobson observed that in Hartford County, in whose program he played an integral part, both a phone and a direct mail campaign had been used with success.

A report covering the subject of "Treasury Gifts and Society Dues Increases" was then given by Dr. Frederick H. Steele (Pennsylvania). It was agreed that the word "assessment" should not be used. Leaders in the plan should be picked from those really interested in AMEF and should proceed in trying to sell others on a substantial figure (\$25, in the case of California) and then work on down from there if objections arose. It was felt that dues increases, after contributors have become accustomed to them, do not affect individual giving.

In the section on "Special Techniques for State Campaigns," Dr. William G. H. Dobbs (Connecticut) gave the report. Mail campaigns were found to be effective in most cases, even more so than personal contact oftentimes, for doctors, in particular, are busy people and do not appreciate their office time being taken up with personal solicitation. It was agreed that the man making the appeal should be known by those to whom the appeal is made. State societies usually cover the expense.

THOMAS F. FAY, M.D.

Maine Medical Association Chairman

Committee On Conservation Of Vision

To the Officers and Members of the Maine Medical Association:

The Committee's work this year has been on the problem of whether optometrists should assist in the eye care program of the State Department of Health and Welfare. This problem has been raised by representatives of the Maine Optometric Association requesting of this State Department that optometrists be used on their eye care program.

A meeting of this Committee with all members attending was held November 21, 1956, to discuss whether the Committee should meet with the Department of Health and Welfare and the representatives of the Maine Optometric Association. It was decided that the Committee would meet with these groups. Concern was expressed that the services of optometrists would be inadequate for cases with subnormal vision or with strabismus, and the Committee made the following resolution.

Resolved: That in regard to the eye examination of children under State care, all cases of strabismus or subnormal vision with glasses should come under the care of an ophthalmologist.

This resolution was conveyed to Mr. John Q. Douglass, Director of the Bureau of Social Welfare, when the Committee met with him and the representatives of the optometrists on

December 15, 1956. At this meeting the difficulties and expense of providing transportation for Child Welfare cases, which are legal wards of the State, from northern Aroostook County to ophthalmologists, was pointed out by Mr. Douglass. He felt that it would be desirable if the ophthalmologists could approve several optometrists in northern Aroostook County for helping in the eye examinations of these cases. This Committee agreed to consider the approval of several optometrists to do this work in northern Aroostook County.

However, a communication from the President of the Maine Optometric Association urged that all members of this Association be considered for participating in the State eye care program. To discuss this development a meeting was held by this Committee on December 19, 1956 and, in regard to considering all optometrists in the State for assisting in the eye care program, the Committee decided to go on record with the following opinion:

Whereas provision of proper eye care for State cases should include a complete eye examination, and
Whereas optometrists are not medically trained so that their eye examinations would be incomplete,
Therefore, this Committee cannot recommend that

responsibility for eye examinations be taken by optometrists for State cases.

This Committee on Conservation of Vision will, therefore, not take part in endorsing any selection of optometrists for aid in the State eye care program. The responsibility for any

selection of optometrists for the State eye care program will, therefore, rest with the Department of Health and Welfare.

Respectfully submitted,
DEXTER J. CLOUGH, 2nd, M.D., *Chairman*

Amy W. Pinkham Fund Committee

To the Officers and Members of the Maine Medical Association:

Prior to the beginning of the recently completed fiscal year of operation of the Amy W. Pinkham Fund, a total of twenty-four equipment grants had been made to assist school hot lunch programs throughout the state. These included 18 refrigerators, 5 deep well sinks and one gas range. These grants have totaled \$4,883.34.

During the fiscal year ended March 30, 1957, only two grants were processed although several inquiries had been initiated.

The first grant was \$211.85 to provide an electric milk cooler for the Sherman School, installation being completed in November.

The second grant was \$100 to the South Thomaston School for work on necessary partitioning to separate cooking and storage facilities from dining area. This was the first grant made which was not for the purchase of a special equipment item, but was most necessary as the community group sponsoring — and building — the lunch facility had exhausted their funds and the partitioning was a necessary safety factor in addition to being a functional need.

These two recently completed projects add a total of 303 students (daily average) to the previous total of 2,322 rural school children being benefited daily through this program.

These two 1956-57 grants, totalling \$311.85, make the total

of grants completed since the beginning of the program — \$5,195.19.

A third project has been initiated but not approved. This is for the purchase of compartment trays for the new program at the Frenchville School. The citizens of this community have contributed much and gone into debt to get their lunch program started. Present supplies of dishes, etc., are old and cracked and insufficient in quantity, thus seriously handicapping operation of the program. Also, incidentally, the total grant allowance of \$250, if made, will not meet the total need of this program.

The financial report of the year's operation is as follows:

Funds on hand, April 1, 1956	\$ 871.35
Interest on Principal,	
less bank charges (\$27.16)	360.34
Total available for projects	\$1,231.69
Total expended, April-March 31	311.85
Balance of Fund, March 31, 1957	\$ 919.84

In each instance, the schools receiving the aforementioned twenty-six grants, have agreed to serve only pasteurized milk.

Respectfully submitted,
NORMAN H. NICKERSON, M.D., *Chairman*

Diabetes Committee

To the Officers and Members of the Maine Medical Association:

During the month of November, 1956, the Seventh National Diabetes Detection Drive was sponsored by the American Diabetes Detection Drive under the auspices of the State and County Medical Societies with the aid of local hospitals, physicians, and nurses.

We received the usual helpful cooperation from the newspapers, radio, and television. In addition, in some localities, especially in Penobscot County, the drug stores worked along with the physicians in collecting urine specimens.

Six thousand eight hundred and eight-five specimens were examined in all and fifty-eight specimens of urine were for the first time found to be positive. The number of actual diabetics was unknown as the opportunity for blood sugar analyses was

available in only one county where seven new cases were found among two thousand one hundred and seventy-eight patients examined. The names of all those showing urinary sugar or having an elevated blood sugar were sent to the family physician.

The showing for 1956 was reasonably good, but it is hoped that the number will be greater in 1957, as poorly controlled diabetes is now recognized as one of the commonest causes of degenerative vascular disease, resulting in blindness, coronary disease, strokes, nephritis and loss of limbs.

Respectfully submitted,
E. R. BLAISDELL, M.D., *Chairman*

Committee On Mental Health

To the Officers and Members of the Maine Medical Association:

There has been no formal meeting during the year. However, the Chairman has contacted the members of the committee individually in regard to the interest of the public in establishing community mental health clinics in the Portland, Lewiston-Auburn and Bangor areas. It is hoped that all mem-

bers of the Maine Medical Association will encourage the communities in this undertaking.

Respectfully submitted,
MARGARET R. SIMPSON, M.D., *Chairman*



DEAN H. FISHER, M.D.
COMMISSIONER

State of Maine

Department of Health and Welfare

Patient Services Available At Central Maine Sanatorium, Fairfield, Maine

WILLIAM B. GROW, M.D., Superintendent

Patients are admitted to the State Sanatoria usually on referral by their own family physician. It is apparent from talking with various physicians that many of them do not know what can be offered the patient whom they refer to the Sanatorium. Consequently, we plan to list briefly the facilities we have, in the hope that the patients will have a little better idea before they enter as to what is available for them.

Physical Plant: Central Maine Sanatorium has, in common with the other State Sanatoria, several old wooden buildings in various stages of repair and disrepair. However, in addition to these, we have the new George E. Young Medical and Surgical Unit which was opened July 1, 1955. This strictly modern building of fireproof construction was built at a cost of over half a million dollars. It has sixty-four beds, two recovery rooms, and two completely air-conditioned operating rooms, as well as x-ray facilities, diagnostic facilities, therapeutic x-ray facilities, laboratory, pharmacy, out-patient department and administrative offices. Incidentally, the Central Maine Sanatorium has full approval from the American College of Surgeons and, in addition, is approved by the American Medical Association for Residency training in Diseases of the Chest.

Surgical Facilities: Central Maine Sanatorium can offer the in-patient complete surgical service consisting of any type of thoracic surgery, including lobectomy, pneumonectomy, etc. In addition to this bronchoscopies are done regularly. I.V.P.'s and retrograde pyelograms are frequently done. Any necessary general surgery, such as hernias, appendectomies, T & A's, etc. is done as required.

Active Staff: The active staff at the Central Maine Sanatorium consists of the Superintendent and two Resident Physicians. Besides these, there are three qualified Thoracic Surgeons and one Anesthetist who

come here regularly once a week for surgery, and for general conferences on surgical cases and medical diagnostic problems. All three surgeons and the anesthetist are, of course, Board men.

Consulting Staff: The Central Maine Sanatorium has a complete consulting staff in practically every specialty that might be needed for proper care of the in-patient. Consultants are available in cardiology, internal medicine, pathology, roentgenology, ear, nose and throat, ophthalmology, gynecology, genitourinary diseases, orthopedics, allergy, pediatrics, dentistry, chest diseases, psychiatry, and general surgery. Practically all of these men are Board men in their specialties, and a good many of them attend the regular Friday surgical and diagnostic conferences.

X-Ray And Other Facilities: The diagnostic x-ray at Central Maine Sanatorium is the new 300 milliamp General Electric Imperial, which is complete with all accessories for Bucky work, spot films, stereoscopic work, laminagraphy, etc. In our opinion, there is no finer diagnostic instrument in the State of Maine at the present time. We are also in the process of installing a 250 KVP General Electric Maximar deep therapy unit for such cases as may require radiation therapy. For electrocardiography we have the General Electric Cardioscribe, which we find entirely satisfactory. For dental work and immediate post-operative chest x-ray work we use a General Electric portable x-ray.

Dental Clinic: Central Maine Sanatorium has a complete set-up for dental work including x-ray, fillings, extractions, etc. We have a dentist on the regular staff who comes here a half day every week. This is entirely sufficient to care for all dental needs of the in-patients at the Sanatorium. Each patient has a dental chart as part of his clinical record. This service has been available for some time, but has been improved recently.

Eye Clinic: As a result of a Trust Fund set up a

few years ago we have been able to install a completely equipped eye clinic. The ophthalmologist comes once a week to take charge of this clinic. Full diagnostic and treatment facilities are available as well as complete facilities for fitting of eye glasses.

Library And Medical Social Service: A large library of fiction, non-fiction, history, biography, etc., is available to the patients. The librarian visits each patient at least once a week with the bookmobile and a choice assortment of books. Funds are available annually for purchase of new books and this particular service seems to be greatly appreciated by the patients. The librarian, in addition to this work, is also in charge of publication of the "Hilltop Observer," a small monthly newspaper which is published by and for the patients. The patients write practically all the articles, and those who are able assist in assembling and mailing out the paper. The "Hilltop Observer" is exchanged with other sanatorium newspapers throughout the country, giving a good interchange of ideas and patients' attitude toward Sanatoria and toward treatment. Unfortunately, we have just lost our full time Medical Social Service worker and, to date, have not been able to replace her. Consequently our librarian, in addition to her other duties, is carrying on the medical social service work to the extent that her time will permit. She plans to interview at some length every incoming patient and, where possible, the relatives of the patient.

Each Tuesday we have a staff conference, in which we discuss the patients who entered during the previous week. At these conferences the house staff is present, as well as representatives of the nursing service, the operative nursing service, the dietary service and the medical social service. Each case is thoroughly discussed as to diagnosis, prognosis, estimated length of stay, treatment and possible surgery, and the medical social service interview is tied in with this discussion. Following this staff meeting, those patients who wish to see their x-rays are brought to the conference room, are shown their x-rays, and any questions they may have are answered as fully as possible by the medical staff. This seems to alleviate a good many of the fears to which a newly entered patient is liable. It also gives the patient a better understanding of his disease, what we can do and what the patient can do in the treatment of the disease and any other factors which may be involved.

Laboratory: The Central Maine Sanatorium has a well equipped laboratory and, at the present time, is fortunate enough to have two technicians. This situation, of course, will not obtain for very long if things go as they usually do in the technician field. Each incoming patient is typed for possible blood transfusion, has a complete blood count, sedimentation rate and urinalysis routinely. Some blood chemistry is done in our laboratory and we hope to do more in the near future. What we cannot do at present is handled for us by the Thayer Hospital laboratory. Our laboratory

now makes its own culture media which we find superior to the commercial media available. In the future, assuming that we can acquire technicians as needed, we hope to do resistance studies. These we are unable to do at the present time and, in fact, I know of no laboratory in the State of Maine which is now doing them. In order to do resistance tests we will have to increase the equipment considerably. Consequently, the idea of doing resistance tests is, at present, merely something we hope for and not an accomplished fact.

The Children's Ward: Until about two and a half years ago we did not have a single child in the institution. Recently, however, we have had as many as twenty, and as of today we have ten children, varying in age from three months to eight years. All these children have extensive primary infection; most of them have cervical and axillary adenopathy, and a good many of them have true pneumonic tuberculosis, in some cases involving an entire lung. We have also had several miliaries in the past two years. The explanation for the sudden increase in the amount of severe childhood tuberculosis is not known at the present time. However, at the sanatorium, it has become necessary to set aside a ward for the care of these children. A specially trained pediatric nurse is in charge of this ward, and we attempt to keep the atmosphere as informal and home-like as possible. We realize that it is distressing to take a child from its home and put it in an institution. Nevertheless, it is interesting to see how quickly and how well these children adapt themselves to their changed circumstances. With the invaluable aid of various TB associations and other outside organizations, we have been able to establish a nursery school for these children at the Sanatorium, and have almost completed work on a large playroom which will be fully equipped with child size furniture, toys, television, etc. We take pride in the fact that almost without exception the children respond remarkably well to chemotherapy and supportive treatment. A consulting pediatrician is available at all times.

School Facilities: This is a service in which we are particularly fortunate. We were able to hire a retired high school principal who is competent to fulfill the entire educational need. Any child from grade I in grammar school through high school who is well enough physically to study can continue his courses while in the Sanatorium and receive full credit toward graduation from any grammar school or high school in the state. The latest count showed four children taking grade school subjects and six of high school age taking high school subjects. If we are to continue to receive grade school and high school children as in-patients, this service is of the utmost value, and certainly the family physician should know that it is available.

Miscellaneous Services: — Recreation: Each floor is equipped with a television set. Patients who are able see movies regularly here at the Sanatorium.

Continued on page 222



ANSWERING QUESTIONS



Blue Shield And The Medical Society

Every doctor has a personal responsibility for the success of his Blue Shield Plan, and a direct opportunity to take part in its control. For the first, basic requisite of any nonprofit prepayment plan that wants to use the name and symbol "Blue Shield," is that the plan be formally and continuously approved by the state and county medical societies in its area of operation.

Another requirement, no less basic, is that a Blue Shield Plan's medical policies and schedules of payment be determined by physicians.

Blue Shield is in fact our own chosen mechanism for making our services more readily available, through prepayment, to our patients.

As such, one would expect the relations between all Blue Shield Plans and their sponsoring medical societies to be as intimate and understanding as between the members of any well run family.

A recent survey conducted jointly by the Public Relations Department of A.M.A. and the Professional Relations staff of Blue Shield Medical Care Plans indicates that relationships between the Plans and their local medical societies in general are excellent, and they have improved most notably in the last few years.

Similar questionnaires sent simultaneously to the Plans and medical societies brought prompt responses from 75% of the Plans and 78% of the societies. Of these respondents, 94% of the Plans and 89% of the medical societies reported good or excellent relations with one another. The interesting fact that in 3 cases the Plans thought their relations with the medical society were excellent while the society reported them to be poor, and in three other cases the contrasting opinions were reversed, only proves we are dealing with people.

When this questionnaire probed a little deeper into the specific character and methods of liaison, however, it revealed some sizeable areas of weakness and some attractive opportunities for improvement.

For example, only 51% of the responding Plans and 58% of the medical societies reported that they maintain "a specific liaison committee" between them. That some of these committees have not exactly rendered conspicuous service is suggested by the fact that in six cases the Plan and the medical society disagreed as to the very existence of a liaison committee between them. As might be expected, there was a very strong correlation between the areas where liaison committees are operating and the areas where the mutual relations are of the best.

Other specific questions related to jointly sponsored meetings for doctors' office assistants; the inclusion of Blue Shield information in the medical society's orientation program for new members; the setting up of co-operative mechanisms for the use of medical society mediation committees to handle patient complaints; and jointly sponsored indoctrination programs for medical students, interns and residents. In each of these areas of potential cooperation, a majority or a very sizable minority of the respondents reported no action as yet.

If the American doctor needs Blue Shield, it is equally true — if not more so — that Blue Shield needs the American doctor. Without his guidance, Blue Shield might become something quite different from what the profession wants it to be. Without the doctor's support and active participation, there would not even be a Blue Shield.

FOR POSITIVE DIURESIS

ROLICTON[®]

Brand of Amisometradine

- oral b.i.d. dosage
- continuous control of edema

The new, highly effective oral diuretic, Rolicton, greatly simplifies the task of maintaining an edema-free state in the patient with congestive heart failure. Rolicton meets the criteria for a dependable diuretic: continuous effectiveness, oral administration and clinical safety.

In extensive clinical studies the diuretic response clearly indicates that a majority of patients can be kept edema-free with Rolicton. In these investigations it was noted that side reactions were uncommon. When they did occur they were usually mild.

In most edematous patients Rolicton may be employed as the sole diuretic agent. When used adjunctively in severe cases, Rolicton is also valuable in eliminating the "peaks and valleys" associated with the parenteral administration of mercurial diuretics.

One tablet of Rolicton b.i.d., after meals, is usually adequate for maintenance therapy after the first day's dosage of four tablets. Some patients respond well to one tablet daily. G. D. Searle & Co., Chicago 80, Illinois. Research in the Service of Medicine.

**SEARLE**

COUNTY SOCIETIES

ANDROSCOGGIN

President, John A. James, M.D., Auburn
Secretary, Donald L. Anderson, M.D., Lewiston

AROOSTOOK

President, Stephen S. Brown, M.D., Mars Hill
Secretary, Clyde I. Swett, M.D., Island Falls

CUMBERLAND

President, Paul C. Marston, M.D., Kezar Falls
Secretary, Stanley E. Herrick, Jr., M.D., Portland

FRANKLIN

President, Hays G. Bowne, M.D., Farmington
Secretary, Paul E. Floyd, M.D., Farmington

HANCOCK

President, Robert F. Russell, M.D., Penobscot
Secretary, Arthur M. Joost, Jr., M.D., Bucksport

KENNEBEC

President, Arthur H. McQuillan, M.D., Waterville
Secretary, Arch H. Morrell, M.D., Augusta

KNOX

President, David V. Mann, M.D., Camden
Secretary, Parker Heath, Jr., M.D., Rockland

LINCOLN-SAGadahoc

President, Stanley R. Lenfest, M.D., Waldoboro
Secretary, George W. Bostwick, M.D., Newcastle

OXFORD

President, Norman M. Jackson, M.D., Rumford
Secretary, Harry L. Harper, M.D., South Paris

PENOBSCOT

President, John J. Pearson, M.D., Old Town
Secretary, Warren G. Strout, M.D., Bangor
Treasurer, Dexter J. Clough, 2nd, M.D., Bangor

PISCATAQUIS

President, Ralph C. Stuart, M.D., Guilford
Secretary, Charles H. Lightbody, M.D., Guilford

SOMERSET

President, Richard P. Laney, M.D., Skowhegan
Secretary, Harland G. Turner, M.D., Norridgewock

WALDO

President, Ernest W. Stein, M.D., Pittsfield
Secretary, John A. Caswell, M.D., Belfast

WASHINGTON

President, Hazen C. Mitchell, M.D., Calais
Secretary, Karl V. Larson, M.D., East Machias

YORK

President, Marion A. K. Moulton, M.D., West Newfield
Secretary, C. W. Kinghorn, M.D., Portsmouth, N. H.

County Society Notes

ANDROSCOGGIN

April 18, 1957

The Androscoggin County Medical Association met at the Central Maine General Hospital.

Paul J. La Flamme, M.D., secretary pro-tem, read the secretary's report which was accepted as read. Otis B. Tibbetts, M.D., presented the report of the finance committee. At the request of the president the finance committee met and made the following recommendations for consideration:

1. If money is to be invested, a permanent finance committee should be appointed to attempt to get the maximum — consistent with safety — returns in the form of income or capital gains.

2. This committee should consist of three to five members. If the members are to be rotated, only one new member a year should be appointed, thus leaving a nucleus on the committee acquainted with the financial picture.

3. The committee should meet as often as is necessary, but at least twice a year, to review the entire financial policy and report with recommendations at the next regular meeting of the society.

4. If the report of the committee is approved it shall be empowered to proceed to make any recommended changes.

5. Any committee action must be approved by two-thirds of the committee members.

On motion duly made and seconded it was voted to accept the report of the finance committee. The present committee appointed at the February meeting and consisting of the following members: Otis B. Tibbetts, M.D., chairman, Michael J. Harkins, M.D., and J. Paul Nadeau, M.D., will serve until January, 1959. In January, 1959 any change will be made in accordance with paragraph 2 of the recommendations.

John A. James, M.D., president, mentioned the Jenkins-Keogh Bill which is before Congress. After discussion it was voted to send a letter to the Senators and members of the House of Representatives expressing the society's interest in the bill. The letter will include a list of the active members of the society.

Dr. W. H. Sawyer, Jr., of Bates College, gave an informative talk about the problems of present-day nursing, the increasing need for trained nurses, the present educational demands of the National League of Nursing Education, and the low percentage of graduate nurses who continue nursing after graduation. Following an interesting discussion, Dr. Sawyer made the following recommendations:

1. A concentrated plan by the medical profession on a national, state, and individual hospital level to inform nursing educators what they want nurses to know.

2. In line with the above, a study of the school curriculum to consider possible revision.

3. Stimulation of interest in the nursing profession among prospective candidates.

4. As part of the above, that nurses be paid a salary commensurate with what they could obtain in other fields at the same level of education.

5. Screen prospective students more carefully. At the present time up to 50% of the students in our Maine hospital schools drop out before graduation.

6. Some system of reward for those students who stay with the hospital after graduation.

7. Stagger vacations, holidays, and weekends so that the available nursing staff may be most efficiently, and so that patients are assured of proper nursing care.

8. Train more practical nurses and nurses' aides.

9. Finally all concerned need to concentrate on the needs of the patient *now* rather than on some ideal system of the future. To do so will require patience and compromise, extra service and hard work. If the educators, the nurses, and the physicians are not willing to make some sacrifices based on humanitarian principles, then we are all in the wrong professions.

Dr. James thanked Dr. Sawyer on behalf of the society.

PAUL J. LAFHAMME, M.D.
Secretary-Pro-Tem.

AROOSTOOK

Harry M. Helfrich, Jr., M.D., of Presque Isle, was elected president of the Aroostook Anti-tuberculosis Association at the annual meeting at the Hotel Caribou, April 30, 1957.

CUMBERLAND

Edward A. Greco, M.D., of Cape Elizabeth, was elected president of the Cumberland County TB and Health Association at the annual meeting at the Eastland Hotel, Portland, on May 16, 1957.

Elton R. Blaisdell, M.D., of Portland, was elected to the Board of Governors of the American College of Physicians at their recent meeting in Boston.

FRANKLIN

April 27, 1957

During the last two meetings the Franklin County Medical Society discussed the desirability of increasing fees and the committee made a revised list. After thorough discussion the members decided that with the general economic level no higher than it is in Franklin County they were not justified in raising fees.

PAUL E. FLOYD, M.D.
Secretary

HANCOCK

April 10, 1957

The Hancock County Medical Society met at the Hancock House, Ellsworth. There were eighteen members present. Robert F. Russell, M.D., president, opened the meeting.

Andrew Fergus, M.D., of Bangor, gave an interesting talk on Psychopharmacology.

The business meeting started with a discussion of the delay in obtaining vaccine for the polio immunization drive. A motion was passed that the society pay for calls to be made by Walter W. Herbert, M.D., of the polio drive committee in an effort to expedite acquiring vaccine for the drive.

Robert F. Russell, M.D., was elected to serve on the board which will decide on total disability applications for social security.

The proposal was introduced that the society should take an official stand regarding the Eastern Memorial Hospital and make a public release concerning the position of its members to counteract the unfavorable publicity directed against the physicians of this area. The proposed statement of Charles H. Knickerbocker, M.D., and amendments of it were discussed. It was voted that a committee be formed to rewrite the state-

ment and to seek legal advice concerning it, and that the statement be voted on at a special meeting. The committee appointed consisted of Llewellyn W. Cooper, M.D., Philip L. Gray, M.D., and James H. Crowe, M.D.

ARTHUR M. JOOST, JR., M.D.
Secretary

April 23, 1957

There were twenty-one members present at the meeting of the Hancock County Medical Society at the Hancock House, Ellsworth.

Robert F. Russell, M.D., opened the meeting and read the following statement which had been revised by the committee appointed at the meeting on April 10.

"In view of recent public interest in the Eastern Memorial Hospital, Ellsworth, the Hancock County Medical Society is releasing the following statement of policy adopted by majority vote of the Society at a special meeting April 23, 1957.

- "1. The Society does not intend to enter into repeated public controversies and intends for this statement to be its first and last on this subject.
- "2. The Society and its individual physician members are dedicated to the continuation and improvement of any facilities relating to Medical Care of the people of Hancock County. We believe that in any area, and in a rural area particularly, the heart and soul of sound medical practice has always rested and will continue to rest in the hands of the family physician.
- "3. The society believes that excellent medical care has been rendered for many years to the people of this area by the several hospitals and by individual physicians practicing in the County.
- "4. A definite need has existed in the city of Ellsworth for a good Community Hospital. The recent construction of the physical plant has paved the way for the establishment of such a Community Hospital dedicated to the needs of the people of Ellsworth and the surrounding area. It has been implied that the apparent reluctance of the area physicians to apply for staff privileges is due to petty jealousies or other unworthy motives. We have, as a Society, discussed the whole problem extensively and it is our feeling that the area physicians are professionally and ethically justified in not seeking staff privileges at the present time and under present conditions. Some of the Trustees of the Eastern Memorial Hospital have been apprised of these objectionable conditions but as yet no official action has been taken.
- "5. When the present Administration of the Eastern Memorial Hospital shows concrete evidence of its intention to change the objectionable conditions, the Society then would be willing to sponsor conferences between all parties concerned."

The society passed a motion that some public statement should be made. And, after reading and discussing a letter from Philip Lovell of the Board of Trustees of Eastern Memorial Hospital, a motion that the society should release the above-quoted statement was opened for discussion. Edward S. O'Meara, M.D., presented his point of view regarding staff privileges and the place of the general practitioner in the Eastern Memorial Hospital. He stated that his position in this regard has not changed since the inception of the hospital.

After further discussion, motions were carried affirmatively to release that statement immediately to all local newspapers.

ARTHUR M. JOOST, JR., M.D.
Secretary

May 8, 1957

The Hancock County Medical Society met at the Hancock House, Ellsworth. There were thirteen members present.

James H. Crowe, M.D., presented the proposed budget of the Maine Medical Association for 1957-1958 and the budget was approved.

Walter W. Herbert, M.D., reported the acquisition of polio vaccine for the polio drive. Distribution of the vaccine was discussed.

The speaker of the evening was Gardiner N. Moulton, M.D., of Bangor, who gave an interesting talk on Corneal Transplants.

ARTHUR M. JOOST, JR., M.D.
Secretary

LINCOLN-SAGADAHOC

April 16, 1957

Sixteen members and three guests were present at the monthly meeting of the Lincoln-Sagadahoc County Medical Society.

The president, Stanley R. Lenfest, M.D., called the meeting to order and welcomed Ronald A. Bettel, M.D., and Charles H. Patton, Jr., M.D., guests from Brunswick.

John F. Andrews, M.D., reported on the Maine Medical

Association House of Delegates' meeting April 14th at which Plans A, B and C for the new Blue Shield contracts were approved. John F. Dougherty, M.D., stated that the Insurance Committee is considering further revisions relating to surgical assistants' fees.

Orvar Swenson, M.D., surgeon-in-chief of the Boston Floating Hospital, gave an interesting talk on surgical problems and new approaches encountered in congenital megacolon, megalo-ureter, and exstrophy of the bladder.

GEORGE W. BOSTWICK, M.D.
Secretary

YORK

May 8, 1957

Major William Role, USAF, gave an interesting and instructive talk on "Etiology of Malpractice" at the bi-monthly meeting of the York County Medical Society held at the Portsmouth Air Base.

Those present made a complete tour of the Air Base. There were seventeen members and thirteen guests.

C. W. KINGHORN, M.D.
Secretary

News and Notes

Maine Cancer Society Awards Research Fellowships

The Maine Cancer Society has recently awarded twelve special fellowships for an intensive course at the New York Memorial Center for Cancer Research to Maine physicians and administrators of hospitals who are also registered nurses.

Irving I. Goodof, M.D., of Waterville, president of the society, announced the recipients of the fellowships. The physicians were: Armand Albert, M.D., of Van Buren, president of the Maine Medical Association; Richard C. Wadsworth, M.D., of Bangor, pathologist at Eastern Maine General Hospital, and John F. Reynolds, M.D., of Thayer Hospital, Waterville, both of whom are members of the Maine Cancer Society board of directors; Charles D. McEvoy, Jr., M.D., of Eastern Maine General Hospital; and Philip O. Gregory, M.D., of St. Andrews Hospital, Boothbay Harbor.

Others receiving fellowships were: Miss Pearl Fisher, R.N., administrator of Thayer Hospital and secretary of the Maine Cancer Society's executive committee; Sister Annunciata, R.N., administrator of Mercy Hospital, Portland; Mother Mary Elizabeth, R.N., administrator of Madigan Memorial Hospital, Houlton; Mrs. Ethelyn Morse, R.N., Miles Memorial Hospital, Damariscotta; Miss Mabel Brackett, R.N., administrator of St.

Andrews Hospital, Boothbay Harbor; Mrs. Avis Boardman, R.N., director of Nursing Service, and Mrs. Amy Allen, R.N., both of Thayer Hospital.

Tri-State Clinical Meeting

Two hundred physicians attended the fourth annual tri-state spring clinical meeting of the Maine, New Hampshire and Vermont Chapters of the American Academy of General Practice. The day-long session held at the Lafayette Hotel in Portland was addressed by Eugene H. Drake, M.D., of Portland, director of the heart station at Maine Medical Center; John Fowler, M.D., Barre, Massachusetts, a past president of the Academy; Walter C. Lobitz, M.D., assistant professor of dermatology and syphilology at Dartmouth Medical School; John G. Young, M.D., clinical professor of pediatrics at Southwestern Medical School, University of Texas, Dallas; Charles E. Flowers, Jr., M.D., associate professor of obstetrics and gynecology at the University of North Carolina, Chapel Hill; Louis K. Diamond, M.D., associate professor of pediatrics at Harvard Medical School; and Louis Weinstein, M.D., associate professor of medicine at Boston University School of Medicine.

Necrologies

RICHARD HENRY STUBBS, M.D.

1875-1957

Richard H. Stubbs, M.D., 81, died in Augusta, Maine, April 11, 1957, after a long illness.

Dr. Stubbs was born at Strong, Maine, June 27, 1875, son of Philip Henry and Julia A. Goff Stubbs. He was graduated from Edward Little High School in Auburn, in 1894, Bowdoin College in 1898 and received his medical degree from Harvard Medical School in 1902. He interned at St. Elizabeth's Hospital, Boston, and did postgraduate work in Vienna and at the Mayo Clinic.

He started his practice in Augusta in 1903 and retired a few years ago. At the 1952 annual session of the Maine

Medical Association he was presented a fifty-year medal in recognition of the many years he had devoted to the practice of medicine. He was a member of the American Medical Association, Maine Medical Association and Kennebec County Medical Society. He served as president of his county society in 1917. He was on the staff of the Augusta General Hospital for many years.

His wife, the former Ethelyn H. Burleigh, died in 1948 and a son, Richard H. Stubbs died in 1955. He is survived by a sister, Mrs. Charles W. Bell of Farmington.

ROSCOE C. UPHAM, M.D.

1885-1957

Roscoe C. Upham, M.D., of Biddeford, died suddenly of a heart attack on Friday morning, March 15, 1957. He had been practicing the previous day. Dr. Upham had practiced medicine in Biddeford, specializing in Eye, Ear, Nose and Throat, for the past thirty-two years. Previous to that he practiced in Portland, and Fort Kent.

Dr. Upham was born in Van Buren, Maine, May 7, 1885, the son of George C. Upham, M.D. and Annie D. Upham. He was graduated from the University of Maryland Medical College in 1908. He was recently honored by the University of Maryland Medical College Alumni as one of its oldest practicing physicians.

He was a member of the American Medical Association, the Maine Medical Association and the Cumberland County

Medical Society. He was a former member of the American Ophthalmological Society. He was a devout Catholic, a Communicant of St. Mary's Parish, Biddeford, a member of the Holy Name Society and formerly a member of the Knights of Columbus.

He is survived by his widow, Mrs. Adelaide Nedeau Upham; two daughters, Mrs. Mary Craven, Arlington, Massachusetts, and Mrs. Bernice Thompson, Salinas, California; four sons, Bernard G. of Vienna, Virginia, Dr. Louis J. Upham, optometrist of Augusta, Leo D., Concord, Massachusetts and Paul J., of Maynard, Massachusetts; and a sister, the Reverend Sister St. Bernard of the Good Shepherds College, Quebec. There are eleven grandchildren.

Deceased

ANDROSCOGGIN COUNTY

GEORGE D. DESAULNIERS, M.D., 106 Chestnut Street, Lewiston, on April 20, 1957.

CUMBERLAND COUNTY

HENRY W. BECK, M.D., Gray, on June 4, 1957.

FRANKLIN A. FERGUSON, M.D., 9 Deering Street, Portland, on March 23, 1957.

Announcements

STATE OF MAINE
BOARD OF REGISTRATION OF MEDICINE
ADAM P. LEIGHTON, M.D., *Secretary*

192 STATE STREET, PORTLAND, MAINE

Physicians Licensed to Practice Medicine and Surgery in the State of Maine

March 14, 1957

THROUGH EXAMINATION

William H. Austin, M.D., 22 Bramhall St., Portland, Me.
Henry Arthur Connolly, Jr., M.D., 159 Mountain Ave., Summit, N. J.
Joseph William Crowley, M.D., 163 Victoria Road, New Britain, Conn.
George E. Dimza, M.D., Bangor State Hospital, Bangor, Me.
George Dycio, M.D., 22 Ellington St., East Orange, N. J.
Emile Frigault, M.D., Tracadie, N. B.
Louis Sidney Hornstein, M.D., 7953 Montgomery Ave., Elkins Park, Pa.
Barnett John Junker, M.D., Anderson Hospital, Houston 25, Texas.
Lucas L. Kulczycki, M.D., North Reading State Sanatorium, North Wilmington, Mass.
Zacharias E. Matthews, M.D., Willowbrook State School, Staten Island, N. Y.
Alberto Mazzoleni, M.D., Beth Israel Hospital, 330 Brookline Ave., Boston 15, Mass.
G'loria Mary Miniutti, M.D., North Berwick, Me.
J. Spencer Munroe, M.D., 69 Clifton Place, Jersey City, N. J.
John R. Murphy, M.D., 244 Danforth St., Portland, Me.
Henry L. Spiegelmann, M.D., 955 Hilltop Rd., Plainfield, N. J.
Roman M. Kysilewskyj, M.D., 235 Smith St., Newark, N. J.

THROUGH RECIPROCITY

Herschel Douglas Collins, M.D., Caribou, Me.

Harry T. French, M.D., 44 College St., Hanover, N. H.
Allan W. Handy, M.D., R.F.D. 1, Rochester, N. H.
Joelle C. Hiebert, Jr., M.D., 249 River St., Mattapan, Mass.
Alfred T. Holt, M.D., 13 Robinson St., Newport, R. I.
John Lu, M.D., East St., Tewksbury, Mass.
Cyprien L. Martel, Jr., M.D., U.S.V.A. Hospital, Newington, Conn.
Charles R. Preble, M.D., 1401st USAF Hospital, Andrews AFB, Md.
Charles S. Prescott, M.D., 12 Parramatta Rd., Beverly, Mass.
James W. Reynolds, M.D., 8293 Asbury Park, Detroit 28, Mich.
George W. Sanger, M.D., 127 Bay State Road, Boston, Mass.

American Board Of Obstetrics And Gynecology

Applications for certification (American Board of Obstetrics and Gynecology), new and reopened, for the 1958 Part I Examinations are now being accepted. All candidates are urged to make such application at the earliest possible date. Deadline date for receipt of applications is September 1, 1957. No applications can be accepted after that date.

Candidates for admission to the Examinations are required to submit with their application, a typewritten list of all patients admitted to the hospitals where they practice, for the year preceding their application, or the year prior to their request for reopening of their application. This information is to be attested to by the Record Librarian of the hospital or hospitals where the patients are admitted and submitted on paper 8½ x 11". Necessary detail to be contained in the list of admissions is outlined in the Bulletin and must be followed closely.

Current Bulletins outlining present requirements may be obtained by writing to the Secretary, Robert L. Faulkner, M.D., American Board of Obstetrics and Gynecology, 2105 Adelbert Road, Cleveland 6, Ohio.

DEPARTMENT OF HEALTH AND WELFARE — *Continued from page 215*

Besides this, various church and fraternal groups, as well as other organizations, frequently present minstrel shows, plays, concerts, etc.

Rehabilitation: While we do not have an in-sanatorium rehabilitation service we work closely with the State Vocational Rehabilitation Division. Their representative makes regular visits and arranges for courses in various rehabilitation projects.

Veterans Administration: A representative of the Veterans Administration calls regularly on all veterans in the Sanatorium and discusses with them any problems that they may have. This has proved to be a very valuable service and is one which we hope will be continued and amplified.

Handicraft: With the assistance of various TB associations and other outside organizations, materials have been made available for leather-working, wood-working, fly-tying and similar handicraft projects. Special rooms have been fitted up for this purpose.

In the foregoing remarks we have attempted to acquaint physicians throughout the State with the facilities that we can offer the patients whom they send to us and, in conclusion, we wish to extend a sincere and cordial invitation to any physician in the State of Maine to visit the Central Maine Sanatorium and see for himself how these various services are planned and carried out.

Tuberculosis Abstract

The results of pulmonary resection in one thousand, one hundred and fifteen patients out of a total group of one thousand, one hundred and sixty-five followed from 1944 to 1954 show an operative mortality of three percent and an additional mortality from various causes, including active tuberculosis of three percent. Two percent of the patients are still classified as having active tuberculosis. Ninety-one percent are clinically well and are classified as having inactive tuberculosis.

Reference: *Pulmonary Resection as an Adjunct in the Treatment of Pulmonary Tuberculosis*, Joseph W. Gale, Helen Dickey, John Rankin, Anthony Curreri; *American Review of Tuberculosis and Pulmonary Disease*, Volume 74, Page 29, July, 1956.

*The Maine Trudeau Society, Medical Section, Maine Tuberculosis Association

AUDITOR'S REPORT
JOSEPH STILLMAN
CERTIFIED PUBLIC ACCOUNTANT
97A EXCHANGE STREET
PORTLAND, MAINE

June 6, 1957

Maine Medical Association
Brunswick
Maine

Gentlemen:

I have examined the accounting records of the Maine Medical Association for the fiscal year ended May 31, 1957 and all related data and information pertinent thereto. I have found the records to be in order and all funds properly accounted for.

In my opinion, the enclosed exhibits, Balance Sheet and Statement of Income Expense, with supporting schedules, present the true financial condition of the Maine Medical Association as of May 31, 1957 and the results of its operation for the fiscal year then ended.

Yours truly,
JOSEPH STILLMAN

Exhibit A

MAINE MEDICAL ASSOCIATION
BALANCE SHEET
As at May 31, 1957

ASSETS			
Cash on Hand and in Banks (See Schedule III)		\$33,254.54	
Accounts Receivable:			
Dues	\$ 1,455.00		
Advertising — Journal	3,283.78		
Department of the Army — Medical Care Program	1,536.09	6,274.87	
Loans Receivable			
Medical Student		500.00	
Securities (See Schedule VII)		17,145.55	
Furnishings and Equipment		2,509.69	
Accrued Interest Receivable		119.58	
Prepaid Expenses:			
Annual Session	\$ 684.99		
Postage and Mailing	38.27	723.26	
Trust Fund Investment (See Schedule II)		4,302.08	
Total Assets			\$64,829.57
LIABILITIES*			
Accounts Payable		\$ 2,030.55	
Due for Payroll Taxes and Taxes Withheld		396.08	
Due Spaulding Memorial Library at Maine Medical Center (Income from Thayer Library Trust)		40.00	
Deferred Income:			
Convention Exhibit Space		3,040.00	
Total Liabilities			\$ 5,506.63
Excess of Assets over Liabilities			\$59,322.94
CAPITAL AND FUNDS			
Capital Account (See Schedule I)		\$55,020.86	
Trust Funds (See Schedule II)		4,302.08	
Total Capital and Funds			\$59,322.94

Exhibit B

STATEMENT OF INCOME AND EXPENSE
FOR THE YEAR ENDED MAY 31, 1957

INCOME		
Dues		\$37,836.00
Journal (See Schedule IV)		21,998.68
Annual Session (Exhibits)		3,225.00
Investments (See Schedule V)		700.79
Miscellaneous Income		314.63
Total Income		\$64,075.10
EXPENSES		
Administrative Expense of Office (See Schedule VI)		\$26,297.20
Journal (See Schedule IV)		16,679.85
General:		
Annual Session	\$ 3,428.50	
President's Expenses	477.67	
Councilors' Expenses	659.38	
Medical Advisory Committee (Legal Counsel)	1,000.00	
National Education and Public Relations	1,542.37	
Other Committees	528.57	
Delegates New England Medical Societies	338.46	
Delegates American Medical Association	352.98	
New England Council Dues	100.00	
Woman's Auxiliary	276.39	
Fall Clinical Session	90.25	
Equipment	561.64	
Annual Rosters	225.73	9,581.94
Total Expenses		\$52,558.99
Net Income for the Period		\$11,516.11

Expense of Legislative Session (Legal Counsel) is not included above since no bills had been submitted up to the date of the audit and no information was available regarding these costs.

*No liability for the cost of Legislative Session is included above under "Liabilities" since no bills had been submitted up to the date of the audit, and no information was available regarding these costs.

Schedule I

CAPITAL ACCOUNT
FOR THE YEAR ENDED MAY 31, 1957

Balance June 1, 1956	\$43 504.75
Additions to Capital:	
Net Income for the Year Ended May 31, 1957 (Exhibit B)	11,516.11
Total	\$55,020.86
Deductions from Capital:	
None	.00
Balance May 31, 1957	\$55,020.86

Schedule II

TRUST FUNDS AND TRUST FUND INVESTMENTS
MAY 31, 1957
TRUST FUND INVESTMENTS

Prince A. Morrow Trust:			
36 Shares American Agricultural Chemical Co. (Cost)	\$	348.00	
Canal National Bank Savings Book #3905:			
Balance June 1, 1956	\$	2,670.16	
Add: Dividends Received		162.00	
Interest on Savings		121.92	2,954.08
			\$ 3,302.08

Thayer Library Trust:			
Portland Terminal Company 4% First Mortgage 1961		1,000.00	
Total Trust Fund Investments			\$ 4,302.08

TRUST FUNDS

Prince A. Morrow Fund:			
Principal	\$	554.94	
Income		2,747.14	3,302.08

Thayer Library Fund:			
Principal		1,000.00	
Total Trust Funds			\$ 4,302.08

Schedule III

SCHEDULE OF CASH RECEIPTS AND DISBURSEMENTS
FOR THE YEAR ENDED MAY 31, 1957

Cash Balance June 1, 1956	\$24,021.19
Cash Received From:	
State Dues	38,122.00
Journal Portion of State Dues	1,468.00
Journal Advertising	18,732.30
Journal Miscellaneous	336.86
Exhibit Space Rentals	3,510.00
Investments	773.88
United States Government Bonds — Expired	4,000.00
Thayer Library Trust Investment	40.00
Miscellaneous (Transfers, etc.)	1,536.63
Members for American Medical Association Dues	14,087.50
Employees for Taxes Withheld	2,764.76
Total Cash Received	85,371.93
Total Cash	\$109,393.12
Cash Disbursements:	
Office Administrative:	
Salaries	\$20,609.33
Travel Expense	1,460.27
Office Expense	3,434.36
Journal:	
Printing and Plates	\$15,494.10
Office Expense	966.55
Employees' Payroll Taxes	3,400.43

General:		
Annual Session	\$	3,756.17
Medical Advisory Committee (Legal Counsel)		1,000.00
President's Expenses		477.67
Woman's Auxiliary		150.00
Miscellaneous (Delegates, Councilors, Committees, etc.)	3,867.82	9,251.66

United States Treasury Bonds	
Purchased	3,914.59
American Medical Association for Members' Dues	
Office Equipment and Furniture	14,087.50
Loan to Medical Student	561.64
Department of the Army — Medical Care Program	500.00
Miscellaneous (Refunds, Transfers, etc.)	1,181.15
	1,277.00

Total Cash Disbursements	76,138.58
--------------------------	-----------

Cash Balance May 31, 1957	\$33,254.54
---------------------------	-------------

Canal Bank Regular Checking Account	
Canal Bank Special Checking Account AMA	\$31,364.38
Maine Savings Bank Book #7751	141.98
	1,748.18
Total Cash in Banks May 31, 1957	\$33,254.54

Schedule IV

SCHEDULE OF JOURNAL INCOME AND EXPENSE
FOR THE YEAR ENDED MAY 31, 1957

INCOME

Journal Portion of State Dues	\$	1,424.00
Advertising:		
State Journal Advertising Bureau	19,348.34	
Local Advertising	955.98	20,304.32
Miscellaneous Income and Subscriptions		270.36
Total Income		\$21,998.68

EXPENSES

Printing and Plates	\$15,656.28
Postage and Mailing	219.69
Telephone	295.67
Office Supplies and Expense	464.61
Rent	20.00
Miscellaneous Expense	23.60
Total Expenses	\$16,679.85

Above items of expense do not include any portion of salary of Secretary-Treasurer, Stenographer's Salary or Payroll Taxes.

Schedule V

SCHEDULE OF INCOME FROM INVESTMENTS
FOR THE YEAR ENDED MAY 31, 1957

Income From:		
Interest:		
United States Government Bonds	\$	76.67
Portland Terminal Company Bonds		150.00
Province of Nova Scotia Bonds		37.50
Jacksonville Gas Corporation Bonds		40.00
Maine Savings Bank	51.27	\$ 355.44
Dividends:		
Central Maine Power Co.—Preferred	\$	42.00
Consolidated Edison Co. of New York—Preferred		50.00
The Chase Manhattan Bank		72.85
First National Bank of Boston		67.10
Guaranty Trust Co. of New York		62.40
National Union Fire Insurance Co. of Pittsburgh, Pa.		46.00
Stockton, Whatley, Davin & Co.	5.00	345.35
Total Income from Investments		\$ 700.79

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President-elect, EUGENE E. O'DONNELL, M.D., Portland

<i>Councilors</i>	<i>District</i>	<i>Term Expires</i>
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JAMES A. MACDOUGALL, M.D., Rumford	Second District; Androscoggin, Franklin, Oxford	1960
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RAYMOND E. WEYMOUTH, M.D., Bar Harbor	Fifth District; Hancock, Washington	1958
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The Journal of The Maine Medical Association

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Meat...

and Protection Against Hypochromic Anemia

Hypochromic anemia, the most common nutritional deficiency in children in the United States, occurs most frequently in the second six months after birth.¹ A major cause of anemia in early infancy may arise from insufficient transfer of iron from the mother to the fetus,² since anemia is not uncommon in pregnant women.

A first step, then, toward prevention of hypochromic anemia in the infant is the provision of a prenatal diet rich in available iron and in high quality protein. A second and most important step is the addition of foods high in utilizable iron (egg yolk, sieved meat and vegetables) to the infant's daily diet as early as possible (usually 3 months after birth).¹

Meat contributes valuable amounts of anabolically effective protein, B vitamins, readily available iron, and other minerals to the nutrition of the pregnant and lactating woman. The feeding of sieved meat to infants after the third month provides well-utilized iron and aids in the prevention of hypochromic anemia.

1. Jackson, P. L.: Iron Deficiency Anemia in Infants, Editorial, J.A.M.A. 160:976 (Mar. 17) 1956.

2. Martin, E. A.: Roberts' Nutrition Work with Children, Chicago, The University of Chicago Press, 1954, p. 211.

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

A m e r i c a n M e a t I n s t i t u t e
Main Office, Chicago...Members Throughout the United States



The Journal of the Maine Medical Association

Volume Forty-Eight

Brunswick, Maine, July, 1957

Number 7

The Influence Of Spinal Anesthesia On The Surgical Risk In Arteriosclerotic Heart Disease

R. L. OHLER, M.D.* AND J. B. DANA, M.D.**

INTRODUCTION

While studying the influence of heart disease upon surgical risk, we became interested in the problem of spinal anesthesia in patients with coronary disease. A review of the literature had revealed the frequently repeated dictum that spinal anesthesia is contra-indicated in patients with arteriosclerotic heart disease.^(1,2) Experimental studies with spinal anesthesia have demonstrated primarily a diminution in both coronary blood flow and left ventricular work during the spinal anesthesia,^(3,4,5) but have failed to provide conclusive evidence regarding the wisdom of its use in the presence of diseased coronary vessels.

MATERIAL

The series to be presented consists of 45 male patients with arteriosclerotic heart disease diagnosed by

accepted criteria, who had 60 operations under spinal anesthesia. Ages of the patients ranged between 49 and 87, with an average of 64. Table I shows the operations performed.

RESULTS

Deaths and postoperative complications are listed in tables II and III. There were 7 deaths during the first 30 postoperative days, a gross mortality rate of 11.7 per cent. Of these, 3 were considered related to the cardiac status, a cardiac mortality of 5 per cent. The 4 deaths unrelated to the cardiac status were as follows: 1 pancreatic necrosis and pneumonia, 1 carcinomatosis, 1 pneumonia, and 1 laryngospasm with anoxia following aspiration of vomitus — an anesthesia accident.

There were a total of 17 postoperative complications, 28.2 per cent. Of these, 9 (15 per cent) were cardiac, 3 respiratory other than pulmonary embolism, 4 pulmonary emboli, and 1 postoperative oliguria. The cardiac complications included 2 myocardial infarctions, one 14 days and one 2 days postoperatively, 3 bouts of congestive failure and 3 bouts of coronary insufficiency.

*Chief, Medical Service, Veterans Administration Center, Togus, Maine

**Cardiologist, Veterans Administration Center, Togus, Maine

There were 30 patients in the series having a total of 40 operations who had one or more of the more serious manifestations of heart disease as evidenced by recent myocardial infarction, old myocardial infarction, recent congestive failure, history of congestive failure, recent severe coronary insufficiency or angina pectoris. There were 5 deaths following these 40 operations, 3 of which were unrelated to heart disease and 2 of which were definitely related to heart disease (5 per cent). There were 12 complications (30 per cent) in this group. Of these, 5 were cardiac, and 3 of the patients with complications died. Of these deaths, 2 were cardiac and 1 non-cardiac.

Old myocardial infarctions were present in 21 patients. In this group, there were 5 complications with 2 deaths, one of which was an anesthesia accident and one of which was related to a respiratory complication. There were *no cardiac deaths*. Only one of the complications was a cardiac complication despite the fact that 11 were among those receiving the highest dosages of the anesthetic agent, and 6 had moderate and 2 severe blood pressure falls.

There were 5 patients with recent myocardial infarctions. Two of these patients had no complications and two died cardiac deaths. One patient had coronary insufficiency during operation.

Following 8 operations in patients with recent congestive failure who were compensated at the time of operation, there were 2 complications; one of these patients also had a recent myocardial infarction and died a cardiac death, and one had postoperative coronary insufficiency. There were 9 operations in patients with a past history of congestive failure, with 3 complications and one death which was non cardiac.

Of 5 operations in patients with recent angina pectoris, one was followed by mild congestive failure in the postoperative period. There were no deaths in this group.

Because of its theoretical importance, the blood pressure during anesthesia was studied. During 22 operations (37 per cent), a significant blood pressure fall occurred (a fall to 90 or below systolic, 70 or below diastolic, or fall of 40 mm. systolic and 20 mm. diastolic). Four of these were severe, 3 falling to zero and one to 60/0. In the four patients with severe drops in blood pressure, there was one death in a patient with a fresh myocardial infarction, and three complications, one of which was cardiac.

During 18 operations, significant but less severe declines of blood pressure occurred with 4 deaths, one of which was possibly cardiac. Six complications occurred in this group, one a myocardial infarction two weeks postoperatively and two other mild cardiac episodes.

It is of interest that 14 of the 22 operations associated with significant decreases of blood pressure were in the group receiving the higher dosages of the anesthetic agent.

In the absence of accurate records regarding level of

anesthesia reached, the anesthetic dose was considered. In 28 cases the dose of pontocaine was 14 mgms or greater. There was a significant hypotension in 18 or 64 per cent of these cases, and of these, 4 showed a

TABLE I

OPERATIONS	
6	Transurethral prostatectomy**
4	Amputation*
4	Cholecystectomy**
13	Herniorrhaphy
2	Laparotomy* **
2	Fistulectomy
1	Gastrectomy and cholecystectomy
1	Abdominal wound closure
1	Abdominal perineal resection
2	Cystotomy
1	Ligation and Stripping, varicose veins
4	Lumbar sympathectomy
1	Hemorrhoidectomy
7	Prostatectomy
1	Polypectomy
1	Nephrolithotomy
1	Cholecystostomy
1	Colostomy and exploratory laparotomy*
1	Embolectomy
1	Pilonidal cystectomy
1	Pancreaticoduodenostomy**
1	Subtotal gastrectomy

* Cardiac Death
** Non-cardiac Death

TABLE II

DEATHS IN SPINAL ANESTHESIA SERIES	
<i>Cardiac Deaths</i>	3 - 5 per cent
2 Operations in presence of fresh myocardial infarctions.	
1 Postoperative congestive failure.	
<i>Deaths Unrelated to Heart Disease</i>	4 - 6.7 per cent
1 Carcinomatosis	
1 Pneumonia	
1 Pancreatic necrosis pneumonia	
1 Anesthesia accident	

TABLE III

POSTOPERATIVE COMPLICATIONS IN THE SERIES	
17 Complications in 60 operations — 28.2 per cent.	
<i>Cardiac</i>	— 9 - 15 per cent
2 Myocardial infarction	
3 Congestive failure	
3 Coronary insufficiency	
1 Pulsus alternans	
<i>Respiratory</i>	— 3
(Other than pulmonary emboli)	
<i>Pulmonary Emboli</i>	— 4
<i>Other</i>	— 1

severe fall in blood pressure. There were 2 deaths (7 per cent) in this group, both cardiac, and both due to acute myocardial infarction. These were the only two deaths in the entire series that were definitely cardiac in origin. There were 10 non-fatal complications (36 per cent) of which 7 were cardiac. Of these seven, 4 were episodes of myocardial anoxia or infarction. Thus, 18 of 22 significant blood pressure falls and 7 of the cardiac complications were in this group receiving the higher dosages of the anesthetic agent.

DISCUSSION

During the period of this study there were 16 cases of arteriosclerotic heart disease in which operation was performed under other types of anesthesia. There were no cardiac deaths and 5 (31 per cent) cardiac complications. In 1939, Brumm and Willius⁽⁶⁾ at the Mayo Clinic reported 257 cases of arteriosclerotic heart disease with 11 (4.3 per cent) definite cardiac deaths, 9 of which were coronary episodes. Spinal anesthesia was used in 2 of these 11. Master et al⁽⁷⁾ in 1937 reported a series of 35 coronary occlusions occurring postoperatively and stated that these were not associated with any particular type of anesthesia. Ladue and Wroblewski⁽⁸⁾ in 1951 reported 14 postoperative myocardial infarctions and found these episodes unrelated to the use of any particular anesthesia agent. Our present cardiac mortality rate of 5 per cent compares with a cardiac mortality rate of 3.3 per cent found in our previously reported series of 134 operations carried out in patients with various types of heart disease under a variety of types of anesthesia.⁽⁹⁾

We are unable to arrive at any definite conclusions concerning the effect of the vasoconstrictor drugs used. In our patients, ephedrine, methoxamine, desoxyephedrine, mephentermine sulfate (Wyamine®), and neosynephrine were used in various combinations, in many cases prophylactically, and in all cases where it was indicated by hypotension. No cardiac irritability or other deleterious effects were noted.

CONCLUSIONS

Although the results in this series are presented in the nature of a preliminary report, we feel justified in drawing the following tentative conclusions:

1. Patients with old myocardial infarcts as the only manifestation of arteriosclerotic heart disease have done well under spinal anesthesia.

2. Patients with a history of cardiac failure whose hearts are compensated at the time of operation may be expected to do reasonably well.

3. A low spinal anesthesia is unlikely to be associated with a significant fall in blood pressure or with postoperative difficulties of a cardiac nature. This is in line with reports which indicate that low spinal anesthesia is accompanied by less profound physiologic effects.

4. Our patients with fresh myocardial infarcts did poorly. Although in these patients, the surgical risk is greatly increased whatever anesthesia is chosen, it is our feeling that the danger from falls in blood pressure is probably greater in these patients, and it is unwise to subject them to spinal anesthesia.

5. No untoward effects were noted from the vaso-pressor drugs used.

6. Our series does not permit any conclusion regarding the risk of spinal anesthesia in patients with recent severe angina pectoris or recent episodes of coronary insufficiency, and we feel that for the present it would be wise to avoid spinal anesthesia in these cases.

The helpful cooperation of Dr. A. W. Squires, Chief, Anesthesiology Section, is gratefully acknowledged.

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Microlithiasis Alveolaris Pulmonum

A Case Report

EDWARD L. FOOTE, M.D.*

This is a case report of a rare disease characterized by the formation of concretions in the lung alveoli which may be either calcified or ossified. Many of the cases, including this one, were asymptomatic. In general there have been relatively few symptoms in contrast to the widespread involvement of lung paranchyma. A review of the literature shows that there have been seventeen previous reported cases, four of which were in English. The first case reported in the English literature was in 1953 by Sharp and Danino. Only seven previous cases had been reported in the literature, but after 1953 there were six case reports in 1954 and two in 1955.

The present case was a 63-year-old male. At autopsy, numerous intra-alveolar concretions were discovered. The patient had symptoms of hypertensive and arteriosclerotic heart disease for several years with episodes of congestive heart failure, attacks of dyspnea and sub-sternal cardiac pain. There was no history of rheumatic fever or syphilis.

The onset of the patient's symptoms was in 1947 when he noticed edema of the feet and was told by his family physician that he had hypertension. Two months later he began to have attacks of sub-sternal chest pain accompanied by choking sensations. His family physician prescribed digitalis which he continued through the years. He had numerous hospitalizations for the above symptoms and developed paroxysmal nocturnal dyspnea. He was hospitalized at Togus in September, 1951, and the following clinical diagnoses were established: Hypertensive and Arteriosclerotic Heart Disease; Cerebral Thrombosis due to Arteriosclerosis with minimal right Hemiplegia; Anxiety Reaction and General Arteriosclerosis. He was hospitalized for approximately two months and during the interval from that time to the present hospitalization in August, 1952, he had three other hospitalizations. Between the hospitalizations he was treated with digitalis (Digitoxin) and Dicumarol, 50 mg. daily with bi-weekly visits to the hospital for Prothrombin and blood determinations. The last admission occurred as the result of a severe attack of sub-sternal pain which radiated to the left arm. Approximately six months after admission he suddenly showed signs of a cerebral vascular accident, lapsed into coma and expired. X-ray examination on September 5, 1952, reported a generalized mottling of the lungs

which appeared less at the base and apex with a diffuse uniform density over the lower two-thirds of the lung fields on the left. Electrocardiogram on March 17, 1953, showed an auricular fibrillation with left ventricular strain. There was no evidence of tuberculosis.

PATHOLOGY

Autopsy revealed that death was caused by a massive intra-cranial hemorrhage from an arteriosclerotic plaque in the basilar artery. He also showed evidence of previous encephalomalacia in the left basilar ganglia region. Examination of the lungs showed that the right weighed 680 and the left 460 grams. The pleural surface was thickened, both lungs were firm, and on section showed minute scattered small yellowish-brown nodules which on palpation were firm and discrete. They were most numerous in the middle and basal portions of both lungs. Because of the small size of the concretions there was no difficulty in sectioning the lungs. The heart weighed 520 grams. It showed a dilatation of the right ventricle and a concentric hypertrophy of the left. There were focal areas of fibrosis in the anterior septal region and diffusely through the left ventricle. There was evidence of arteriosclerotic coronary disease upon which atheromatous plaques were superimposed in the terminal portions of the arteries without actual occlusion. Section of the left main coronary artery showed arteriosclerotic disease with the lumen narrowed by atheromatous plaques. At the hilar portion of the right lower lobe there was encapsulated calcified enchondroma measuring 1.5 cm. in diameter. Iron studies of the concretions showed no increase.

MICROSCOPIC EXAMINATION

Lung: Many of the alveoli contained ossified laminated concretions, some of which filled the alveoli; others were in the alveolar space, not attached to the septa. There was no evidence of foreign body reaction and most of the concretions were found lying free in the alveolar space. There was a moderate amount of increased interstitial fibrous tissue. Sections from the midportion of the lung showed that approximately one-fourth of the alveoli contained similar concretions.

The oldest case of Microlithiasis reported was 72 years old (by Benerd in 1950), and the youngest was 13 (by Petranyi and Zsebok in 1954). Seventeen cases have been reported since 1950 — ten males and seven females. The occupations varied: Four cases were

* Pathologist, Veterans Administration Center, Togus, Maine

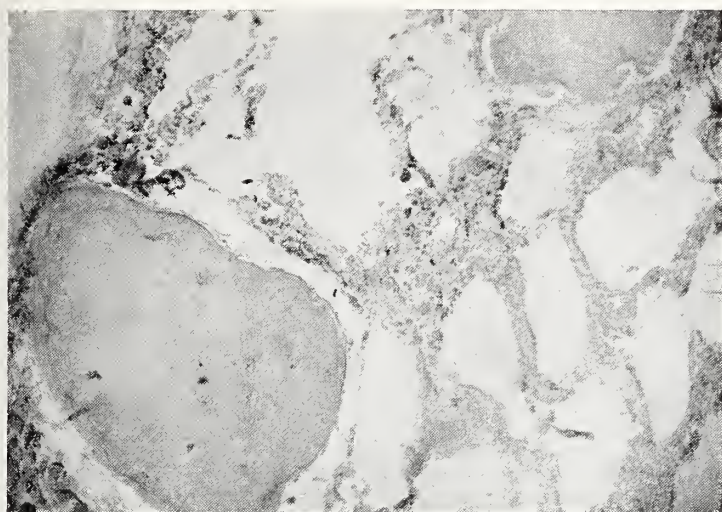


FIG. 1. Ossified concretion distending alveolar space without giant cell reaction. The alveolar spaces are clear without exudate or cellular reaction.



FIG. 2. Laminated concretion with marked interalveolar fibrosis. It is attached to interalveolar septa at one point.

housewives, two were farmers and six cases had an exposure to dust. Nine cases were discovered at autopsy, four by X-ray and four by lung biopsy. Four cases were associated with cor pulmonalae and four had digital clubbing. The last reported case was established by lung biopsy and the patient is reported living. Five cases, including this one, were symptomatic.

Since 1953 there has been increased interest in this condition as evidenced by a report of eight additional cases of which four were by one author, Mikhaulov. Two excellent cases, each with a complete review of previous literature, appeared in 1955 by Kent et al and Badger et al. In Badger's case, stress was laid upon the importance of the acid alkaline calcium relationship and the article gives an excellent gross and microscopic description of their disease. The case was characterized by calcification with little ossification. Kent et al, reported a case of Microlithiasis which they considered to be associated with possible peculiar exudative response to recurrent insults to the lung. The case gave a history of exposure to rock and fiber dust. The report of Microlithiasis by Finkbiner, Decker and Cooper added one additional case. The diagnosis was suspected during life by X-ray findings and was confirmed by lung biopsy. This gave them an opportunity to undertake pulmonary function studies as well as a chemical analysis of the lung material. The authors reviewed the previous literature of the disease, especially in the relation to dust exposure. The earlier cases were diagnosed at autopsy, but later characteristic X-ray pictures were recognized. In 1951, a case was suspected and later confirmed. X-ray findings were characterized by areas of mottling and density, at times obscuring normal structures. In some instances the increased density was in the mid-lung portion. The diagnosis of the disease was first established in 1954 by lung biopsy.

In the pathogenesis of the disease there are two factors. One is stasis, which seems common to all; and

secondly a chronic lower grade continued series of insults to the lung paranchyma. As a result of the irritation there is possible exudative response which later becomes calcified or ossified.

Calcific nodules have been reported associated with rheumatic heart disease and mitral stenosis. Elkeles and Glynn described nodules in alveolar ducts and alveoli which they ascribe to calcification of an alveolar exudate and possible previous exudative alveolar lining. Organization of the above processes followed. Other observers consider that congestive hemorrhagic exudation with organization and calcification are etiological factors. Corpora amylacea are rounded intra-alveolar material which takes an eosinophilic H&E stain. These are rarely ossified or extensively calcified. They are considered to arise from material exfoliated from the alveolar septal walls from unresolved alveolar exudation. They occur in the association with such diseases as chronic pneumonitis, infarction, emphysema and atelectasis.

CASE SUMMARY

A case of Microlithiasis is presented. The case was discovered at autopsy in a 63-year-old white male who had had symptoms and autopsy findings of hypertensive and arteriosclerotic heart disease with episodes of congestive heart failure without X-ray evidence of pulmonary infarctions. The alveolar concretions were ossified in contrast to many of the previously reported cases where calcification was the predominating feature. The concretions were small and involved single alveoli. Diagnostic criteria for earlier diagnosis were pointed out. Possible organization of alveolar exudation following congestive heart failure is considered an etiological factor.

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Continued on page 238

Struma Lymphomatosa In A Young Adult Male

A Case Report

M. D. BRYANT, JR., M.D.*

Struma lymphomatosa, lymphocytic thyroiditis, Hashimoto's disease, is a disease of the thyroid gland of unknown etiology characterized histopathologically by marked lymphocytic infiltration of the thyroid gland together with simultaneous epithelial hyperplasia and degeneration.

Clinically, the disease can be most subtle. It may exist as a non-toxic goiter for as long as eight years and it may be present without goiter. Patients may seek medical advice because of the presence of a goiter or the goiter may first be noted during the course of a routine physical examination. Thyroid enlargement is generally firm, may occasionally be nodular and occasionally may be asymmetrical. Symptoms related to the goiter, pressure in the neck, hoarseness, choking, and slight tenderness may be present. Symptoms and signs of thyroid failure are more often absent than present but thyroid failure of some degree can be demonstrated in all cases by the use of the thyroid stimulating hormone (TSH) test. Patients with struma lymphomatosa will show no significant increase in the uptake of a second tracer dose of I^{131} irrespective of the initial uptake despite having been given four USP units of TSH.⁽¹⁾

The lack of response to TSH appears to confirm the theory that struma lymphomatosa is primary thyroid failure with compensatory thyroid enlargement. Comparative studies showing a disparity between TPBI (total protein bound iodine) and BETBI (butanol extractable protein bound iodine) indicate that the basic defect is a failure of the thyroid cells to produce an adequate amount of thyroxin. This deficiency causes an increased production of TSH which may result in a compensated state of thyroid failure together with the induction of hyperplasia and often hypertrophy of the thyroid cells resulting in most of the thyroid enlargement. It is felt that lymphocytic infiltration and fibrosis occurs secondary to the failure of the thyroid cells.⁽¹⁾

The disease appears predominantly in females and has only occasionally been reported in males. The case herewith reported occurred in a 24-year-old white male. The diagnosis was confirmed by biopsy. A good therapeutic response was obtained from treatment with thyroid extract.

CASE HISTORY

R.G.T.: A 24-year-old, married, white, male clerk typist was admitted to the Veterans Administration Hospital at Togus, Maine, on the 15th of March, 1956, complaining of intermittent choking occurring while lying in bed, together with sensation of difficulty in swallowing pharyngeal secretions — there was no difficulty in swallowing either food or drink — associated for some two or more years with gradual increase in the size of his neck. He had also noted during this period a tendency to gain weight without appreciable increase in his dietary intake, a tendency to sleepiness, and an awareness that he required considerable effort to get himself started on any project. He denied any change in mental function except for an intermittent inability to concentrate. He had noted that his hands and feet had always been cold but denied any general sensitivity to cold. Because of these symptoms he had sought medical advice at a Naval Station in 1954 and at that time his BMR was said to have been minus 36. He was then started on thyroid, $\frac{1}{2}$ grain daily and the dose was increased to $3\frac{1}{2}$ grains daily. On this dosage he developed palpitation and nervousness, and the thyroid was reduced to 2 grains daily and maintained at this level up to the time of his discharge from the Service. Shortly after discharge he discontinued the drug and some 4 or 5 months prior to admission to this hospital his symptoms returned together with increase in his weight from 175 lbs. in April, 1955, to 206 lbs. at the time of admission.

Family history revealed that two aunts had hyperthyroidism with exophthalmus. Otherwise the family history was not contributory. The patient was born and brought up in western Massachusetts. His past history failed to reveal any history suggestive of acute thyroiditis.

Physical examination revealed a well-developed, obese, young, adult white male who did not appear to be either acutely or chronically ill. He was alert, oriented, and cooperative. A firm, diffuse, palpable thyroid without abnormal pulsations or bruits was present on examination. The eyes were negative to external and ophthalmoscopic examination. Cardiovascular examination revealed no pathological findings. Pulse rate was 84 and regular. Blood pressure was 136/70. There was some limitation of range of motion of the right forearm together with some deformity of the right elbow

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representing sequelae of a fracture which had been reduced by open reduction at the age of 14. The skin was clear. The hair was felt to be somewhat coarse. No significant lymphadenopathy was present.

X-ray of the chest revealed the heart and lungs to be normal. Electrocardiogram was within normal limits.

LABORATORY

Routine laboratory studies were within normal limits. Glucose tolerance test was within normal limits. Serum cholesterol was 282 mgm per cent. Basal metabolism was -23. Protein bound iodine was 2.2 micrograms per cent. Total iodine was 3.2 micrograms per cent.

The patient was transferred to the Surgical Service with diagnosis of Hashimoto's disease and a resection of the thyroid isthmus was done. Microscopic examination of the biopsied thyroid isthmus showed an infiltration of mature lymphocytes together with development of lymph follicles, many of which showed active germinal centers. The thyroid acini were compressed and had thickened walls. The lumina contained a small amount of eosinophilic substance. There was also an increase of fibrosis. Throughout the section there was an infiltration of lymph cells. The thyroid tissue in the vicinity of lymphoid infiltration showed a general atrophy with a tendency to fibrosis. Pathological diagnosis was struma lymphomatosa or Hashimoto's disease.

Subsequent to biopsy the patient was returned to the Medical Service on March 31st and was started on thyroid, 1 grain daily for 2 days and increased to 2 grains on the 3rd day. At that time thyroid was discontinued in order that radioactive iodine uptake might be determined. This was done on the 10th of April and was reported as showing 21 per cent. Two days following this test the patient was placed on thyroid extract, 1 grain b.i.d. and was sent home on leave-of-absence status. He returned on the 2nd of May, 1956, in good general condition without complaints. He stated that he had noted improvement in his ability to work and in his performance of work, stating specifically that he was better able to concentrate and that his memory seemed improved. At that time the patient was still moderately obese. A firm, fibrotic-feeling thyroid was still palpable with both lobes appearing to be of equal size. A basal metabolism test done at that time showed a somewhat unsatisfactory curve but was computed as showing a basal metabolism rate of minus 4. He was discharged at that time with the advice that he continue on thyroid extract in a dose of 1 grain b.i.d.

Subsequent to that time the patient continued on thyroid extract in the dose of 1 grain b.i.d. and has been seen at regular intervals. When last seen on the 10th of December, 1956, there had been some decrease in obesity, blood pressure was 134/60, pulse 72 and regular. The thyroid gland was palpable but was not felt to be palpably enlarged and it was noted that in the past couple of months the patient had again been able to button size 15½ shirts. Systematic improve-

ment had been maintained; he felt well, and had been able to work without interruption. He had been taking an active part in sports, his appetite had been good and he had had to restrain himself lest he tend to gain weight. Polydipsia and polyuria were denied. He denied any undue sensitivity to cold or heat.

DISCUSSION

This case throws no light on the obscure etiology of the disease. The diagnosis was suspected on the basis of history, the absence of history of acute thyroiditis and previous favorable response to thyroid therapy. Biopsy was done to confirm the clinical impression inasmuch as TSH test was not available. Actually where clinical findings are indicative of struma lymphomatosa a favorable response to thyroid extract may be considered as a confirmatory test of the diagnosis of struma lymphomatosa.⁽³⁾

Surgical treatment has been recommended for this condition on the basis that pressure symptoms are relieved, postoperative hypothyroidism is kept at a minimum and presence of malignant disease can be ruled out.⁽⁵⁾ Of these, the possibility of intercurrent malignant disease is, in my opinion, the only valid argument for surgical treatment. It is my impression, however, that although there may or may not be significant relationship between thyroid malignancy and struma lymphomatosa, the malignant neoplasms associated with struma lymphomatosa are the lower grades of malignancy.⁽²⁾ And it would seem that keeping the possibility of associated malignancy in mind and planning the patient's clinical follow-up accordingly, would constitute reasonable and adequate handling of the situation. Cortisone, ACTH and x-ray are effective (probably by producing lymphocytolysis) in correcting local symptoms, but it is suspected that the results produced by short courses of these agents will not produce lasting results. The treatment of choice is desiccated thyroid,⁽¹⁾ 2 to 3 grains, which acts physiologically, decreasing the size of the goiter by decreasing pituitary TSH production and correcting both the symptomatic and asymptomatic thyroid deficiency. The response of this patient who had had a relapse as the result of discontinuance of previous thyroid therapy seems to minimize the possibility of a relapse occurring while on treatment and the fear of failure of such relapse to respond to more intensive thyroid therapy.

SUMMARY

A case of struma lymphomatosis confirmed by biopsy, occurring in a young, adult, white male and which responded favorably to treatment with thyroid extract is presented. Histopathology and clinical aspects of the disease are briefly discussed.

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Transrectal Needle Biopsy In The Diagnosis Of Prostatic Carcinoma

MEYER EMANUEL, M.D.* AND EDWARD L. FOOTE, M.D.*

Few subjects in urology during the past fifteen years have been given as much attention as the diagnosis and treatment of carcinoma of the prostate gland. The admonition to "do a rectal" now seems to be well heeded by the vast majority of practitioners. Any firmness, asymmetry, nodule, or suggestion of fixation of the gland, sparks a lively suspicion. Even in the absence of these signs or urinary symptoms, many examiners are aware that carcinoma may still be present. With some significant difference of opinion as to the ultimate value of radical surgery, there is nevertheless fairly wide acceptance of the view that the only means for cure — or, more correctly, prolonged survival five, ten or more years without evidence of metastases — is early diagnosis of the lesion while it is still confined to the anatomical capsule. It is further understood that the surgery — so-called radical or total prostatectomy in good operative risks — consists of removal of the prostate with its anatomical capsule, seminal vesicles, bladder neck and the associated fascial envelopes.

In keeping with this alertness there is a well-tempered if anxious demand for a test to confirm the rectal impression of carcinoma of the prostate, which is quick, accurate and practical. No surgeon relishes a cancer operation in which the diagnosis is not clear-cut. Increased firmness, or a nodule (except for prostatic calculi which can be ruled out by x-ray), can mean granulomatous prostatitis, old fibrosis, tuberculosis, simple benign tissue and, rarely, sarcoma. Certainly today, making a diagnosis by periodic rectal examinations "to see if the nodule gets bigger" or noting changes in the gland after a course of estrogenic hormone, are outmoded. Further, carrying out orchiectomy on the basis of rectal findings alone where evidences of metastases are absent, except in a few special cases, is no longer acceptable as appropriate treatment.

Cells obtained by prostatic massage, and serum acid phosphatase and "prostatic fraction" studies so far have not proven to fill the need. Obviously, obtaining "bits of tissue from suspicious cancerous areas" (Gilbert J. Thomas) is the surest means of diagnosis.

But, in this connection, it is well to point out that the very small lesions or "foci" may not only be undetectable rectally but that any biopsy method is correspondingly limited because of the small size of

the lesion and/or inaccessibility to the needle, forceps or blade. In any case a negative report does not rule out carcinoma. G. G. Smith and Woodruff called attention to data that show that about 10 per cent of prostates enucleated for supposed benign hypertrophy prove to be carcinomatous on routine pathological examination and if "intensive" (complete sectioning) study of the prostate specimens is carried out an additional 10 per cent positive findings can be produced. They have concluded that in about 15 to 20 per cent of patients operated for benign prostatic hypertrophy clinical examination has failed to detect the presence of carcinoma. Further emphasis along these lines is provided by the often quoted statistics of Baron and Angerist who in 50 carefully studied consecutive autopsies in men past 50 years of age, found some evidence of carcinoma in 46 per cent.

METHODS OF BIOPSY

On the basis of available statistics and reports of leading urologists, the most reliable test is the open perineal biopsy. Of necessity, this is a major procedure in which the usual intention of the surgeon is to continue into a total prostatectomy or a simple enucleation depending upon the reaction of the operator to the pathologist's report on the frozen section. It has been admitted that false negatives from frozen section are obtained, although the overall accuracy is high. In some clinics, if there is no obstruction and a negative finding is reported, the wound is closed and the patient allowed several days of convalescence. While the method stands undisputed, it is not applicable to all surgeons and certainly is not a quick procedure.

Biopsy obtained by transurethral prostatic resection, which itself is also a major procedure, usually fails to get down to the posterior lamella where the cancer is more likely to be in early cases.

For quite a few years, the perineal needle biopsy of the prostate gland has been used. Under guidance of a rectal finger, a needle of one type or another is introduced into the prostate gland through the perineum, piercing the skin at a point about one inch above the anal orifice. In spite of a deft rectal finger to guide the needle point, a small nodule can easily be missed. This method is definitely quick, has variable results — some very good but most writers agree that while it has merit, it lacks a high degree of accuracy when applied to the most subtle early lesions. In advanced carcinoma, posi-

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tive results are more easily obtained because the needle point is more likely to strike involved prostate.

More recently, Grabstald and Elliot have directed attention to a transrectal biopsy technique first tried by Elliot in 1947, in which by means of a speculum, the rectal wall over the prostate gland is held in view, incised, and a biopsy forceps with rigid jaws is introduced directly into the substance of the gland to remove substantial pieces of tissue for histological examination. The finger may be inserted through the incision to palpate the nodule before applying the forceps. The incision is sutured when the biopsy is completed. This method has proved far more dependable than the perineal needle procedure and can still qualify as quick. Added advantages are its non-interference with sexual function (which may occur in the open method), and the fact that it permits a radical prostatectomy on an elective basis. Further, the tissue removed is stained by routine technique assuring more certain interpretation by the pathologist. A disadvantage is that it may make dissection at subsequent operation more difficult.

This transrectal route has now been modified further by utter simplification consisting of a direct introduction of the needle (Silverman) into the rectally palpable nodule through the rectal wall to obtain one or more slivers of tissue for routine histological examination. The method was called to our attention about two years ago when we were told that it was being used at the Massachusetts General Hospital.**

DESCRIPTION OF TRANSRECTAL
NEEDLE BIOPSY OF PROSTATE

The procedure as now utilized at Togus† is carried out as follows: Food is withheld on the morning of the biopsy and a thorough enema given. No bowel preparation is carried out with antibiotics or sulfonamides. The patient is put in a sharp lithotomy position with the buttocks elevated by a sandbag. Indwelling catheter, if present, is not disturbed. Anesthesia is provided by intravenous sodium pentothal or surital. The perineum is carefully swabbed with Tr. Zephiran and draped. The rectal ampulla is then swabbed with the same solution using the rectal finger for introduction and rotation of the gauze. Catheter lubricant applied to the finger facilitates this maneuver, which also dilates the sphincter moderately. No speculum is required. The palpating left index finger locates the suspicious site. The finger is then withdrawn and the tip of the Silverman needle placed on the end of the finger which is then re-introduced into the rectum. The needle point is then carefully guided to the nodule in the prostate and pushed into it directly through the rectal wall. The right hand supplies the

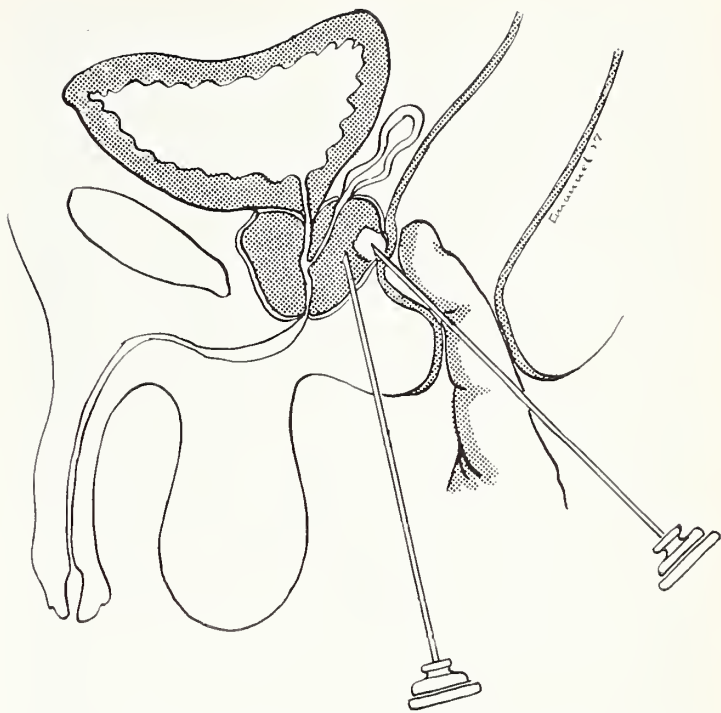


FIG. I. Simplified drawing to illustrate difference between the perineal and transrectal methods of prostatic biopsy. A needle through the rectal wall gets to the suspicious nodule more directly. The perineal needle is more likely to miss it.

force which is applied steadily in a controlled manner. The obturator is removed from the needle and replaced with the two-blade cutting piece which as before is slowly pushed into the prostate as far as seems reasonable to obtain a longer sliver (about 5-15 mm.). The needle itself is now pushed in deeper to complete the cutting. To free the sliver, the blade piece is rotated first in one direction gently then the over. At times, it is necessary to rotate needle and blade together. The blade piece is now pulled out usually with the desired piece of tissue at its end. The blade piece is then stirred gently in a medicine glass filled with saline to shake off the tissue. An assistant may help by scraping off the tissue with a needle point if necessary. (Later the tissue is transferred to formaldehyde.) The blade piece can be re-introduced into the needle for one or more attempts to get more or better tissue. The needle point may be directed at another angle if the nature of the lesion so requires. If suitable tissue is not obtained, the entire procedure can be repeated by entering the prostate through the rectal wall at another nearby point. When the biopsy is completed, the needle is withdrawn and the rectal ampulla again swabbed with Tr. Zephiran solution. No packing is required although in some patients a small trickle of blood is seen at the mouth of the needle, or later from the rectum. For three days after the procedure the patient receives a broad spectrum antibiotic orally or intramuscularly. The entire biopsy can be completed within ten minutes. While our experience is confined to intravenous anesthesia, other types are possible.

To date we have had no recognized major compli-

**By Wyland F. Leadbetter, M.D., Chief Urology, Massachusetts General Hospital.
Further original reference to the method is credited to G. J. Thomas in the Urological Letter Club, April, 1954.
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FIG. II. 1. Introducing the needle into the rectum along with the index finger.
2. Needle introduced; obdurator being withdrawn.

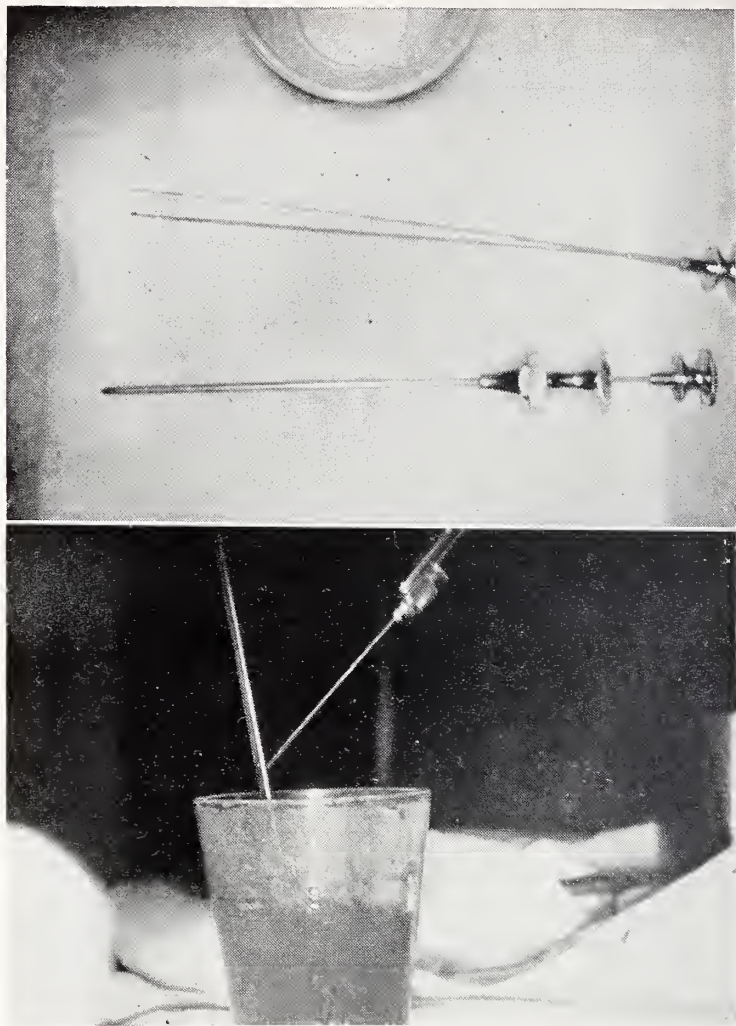


FIG. III. 3. The Silverman needle, obdurator and the two-blade cutting piece.
4. Method of removing the tissue slivers from the blades. Saline in glass.

cations.*** A few of the patients have complained of prostatic pain and tenderness and this has been confirmed by rectal examination during first 24-48 hours. There appeared to be also some inflammatory swelling in the gland incident to the trauma of the manipulation. A few patients showed a slight hematuria, increased urinary irritability or both. For several cases, indwelling catheter drainage was established to avoid obstruction and in anticipation of possible serious bleeding, although so far it has not occurred. All cases were able to get up and walk about later the same day or early the next morning, depending upon how the intravenous anesthesia affected them.

As with the perineal needle method, the transrectal needle biopsy technique allows one or more repeat at-

tempts several days or weeks apart and it is quick. From the point of view of equipment and hospital facilities needed, it is very practical. There remains to be seen what degree of accuracy it can attain in very large series where opportunity for open perineal biopsy is present when two or more negative needle biopsies are obtained.

Further evaluation of transrectal needle biopsy will be concerned with possible introduction of cancer cells in the needle tract and to what degree the inflammatory reaction it causes locally may interfere with easy dissection, especially of the seminal vesicles when total prostatectomy is carried out. We believe the method may be used by any physician who has manual dexterity and who is willing to proceed cautiously.

Although our series of cases is small, a review of our experiences with both the perineal needle biopsy and the transrectal needle biopsy methods is interesting and suggests a possible solution to the need for a means of determining with greater accuracy what cases to subject to radical prostatectomy without resorting only to rectal evidence or being obliged to carry out open perineal biopsy with possible commitment to carry on into further surgery at the same session. Further, it provides the large number of surgeons who are not inclined by

*** A 71-year-old patient with severe pelvic pain and low back ache presented both prostatic carcinoma and a huge rectal mass above it. Following usual transrectal needle biopsy of the prostate, the "mass" above also biopsied to obtain data for surgical service. No tissue obtained. No rectal bleeding. Forty-eight hours later patient died from intra-abdominal rupture of large, dissecting, right internal iliac pelvic aneurism. We do not believe this outcome was related to the prostatic biopsy itself.

choice or training to do perineal surgery justification for retropubic prostatectomy. As for the patients who prove to be inoperable for one reason or another, the diagnosis is definitely settled thus justifying palliative anti-androgenic therapy.

COMPARISON OF PERINEAL AND TRANSRECTAL BIOPSY METHODS RESULTS

	<i>Perineal</i>	<i>Transrectal</i>
Total number of patients	31	44
Total number of biopsies	44	51
Positive at first attempt	9	17
Positive after one negative	2	1
Dubious positive, later confirmed	1	2
Total positives	12	20
Radical prostatectomies on basis of positive biopsy	1	6
Radical prostatectomy in spite of negative biopsy	3	0
Pathological examination of removed prostates:		
Positive	3	6
Negative	1	0
Per cent positive of total biopsies	About 27%	About 40%
Per cent positive of total patients	About 39%	About 45%

COMPARISON OF PERINEAL AND TRANSRECTAL BIOPSY: RESULTS

The accompanying table shows a comparison between the two methods. The perineal biopsies were carried out with the Silverman or Veneema needles. The transrectal biopsies were done only with the Silverman needle. It can be seen that in general the transrectal biopsy method is superior to the perineal. While it is not possible to indicate the nature of the rectal findings in these cases subjected to biopsy in each of the series, it can be stated that it is our impression that after the transrectal method was instituted, a fair number of patients were biopsied who showed minimal rectal basis for suspicion but were examined simply to make sure, and to provide a background for judging the value of such screening. We believe that the percentage of positives in the transrectal series would have been higher if only the strictest criteria for suspicion were applied. In some cases the referring physician's rectal findings were not considered as suspicious as supposed, from the urological examiner's point of view. But we were glad of the opportunity to examine any patient, whatever the basis for thinking that carcinoma was present.

This impression of greater sensitivity of the transrectal needle method is further amplified by reviewing the patients upon whom orchiectomy could be done on the basis of a positive biopsy result and inoperability. The bulk of the patients in the perineal series showed metastases; while in the transrectal group, the opposite was true. Thus, broadly, in the perineal group, the

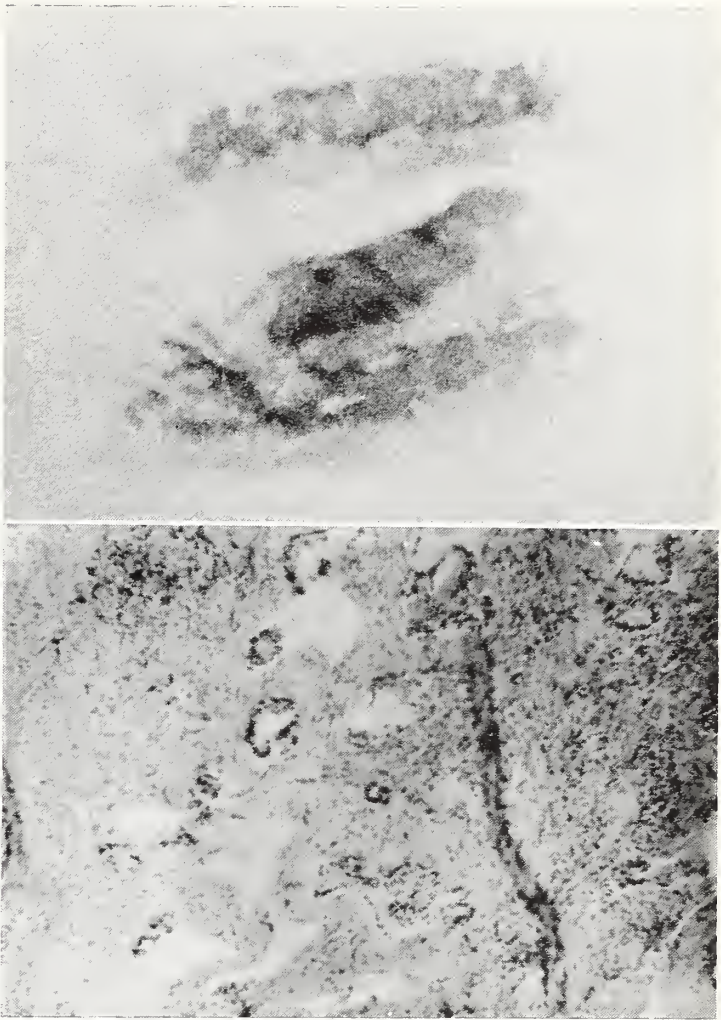


FIG. IV 5. Slivers of tissue each approximately one centimeter long.
6. High dry magnification of one piece of tissue biopsied. Shows nests of small acini invading a dense stroma. There is absence of normal condensation of peri-acinar collagenous tissue but there are epithelial cells in the peri-neural lymph channels. Pleomorphism is present. The acini are irregular. The lining cells show loss of polarity and some of the nuclei are bizarre with evidence of hyperchromatism.

cases can be said to have been more advanced than in the transrectal series.

Because of the simplicity of both methods, repeat biopsies were done in some patients. In the perineal series, five patients were biopsied two times, two patients three times, one patient four times. For the transrectal series, seven patients were biopsied two times.

Attention is called to the radical prostatectomies performed (all retropubic). Whereas only one patient with a positive biopsy was selected for total prostatectomy in the perineal series, six were placed in this category in the transrectal group. Further, in the transrectal series, no cases with a negative report were subjected to the operation. In the perineal series, three patients had the radical operation performed in spite of negative reports of biopsy. One of these failed to show carcinoma after repeated careful section of the removed specimen.

One interesting result in the transrectal series is a negative biopsy report in a patient who was known to have carcinoma on the basis of tissue examined after a transurethral resection of the prostate gland at another hospital, but who, meanwhile, had been given a course of estrogenic hormone treatment without orchiectomy.

SUMMARY

The very early lesion of carcinoma of the prostate may be impossible to detect rectally and correspondingly any method of biopsy therefore has limitations. However, in the light of present knowledge, the open method of perineal biopsy stands as the most accurate means of corroborating rectal evidence of presence of early operable carcinoma of the prostate gland. This method entails a major procedure, is not applicable to all surgeons and is not suited to quick screening of large numbers of patients. The need for a quick, practical, as well as accurate method of diagnosing early cancer of the prostate is still keen. The perineal needle method though quick and practical lacks accuracy in the earlier stages of carcinoma. Forceps biopsy of the prostate gland directly through the incised rectal wall under vision has shown considerable merit and has more recently been further simplified by introducing a relatively non-traumatic Silverman needle directly into the suspicious area of the gland through the rectal wall. This method requires no visualization, no speculum and no incision in the rectal wall. It is quick, requiring only a few minutes, and is, we believe, applicable to a wide range of physicians who have manipulative skill and apply caution. It requires a minimum of facilities and equipment and in our experience has shown superiority over the perineal needle method, with suggestive prom-

ise of dependable accuracy in the diagnosis of early operable carcinoma of the prostate gland. The gist of its value lies in the fact that almost like the open perineal method, it allows direct access to the suspicious area. Time and wide application will give it a more true evaluation.

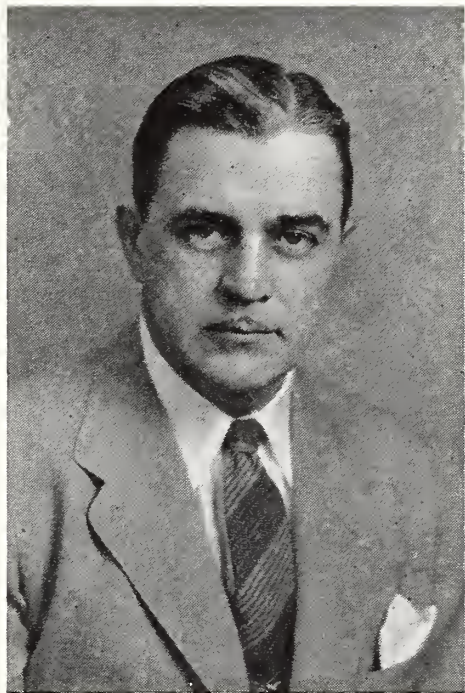
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Across The Desk

Journal Lists Limitations of Tolbutamide

The release of the new oral diabetic drug tolbutamide (Orinase) for prescription use imposes new responsibilities on the physician and patient, according to an editorial in the (June 1, 1957) Journal of the American Medical Association.

The drug, which was available only for experimental purposes until recently, is not a substitute for insulin and can be used only in certain types of diabetic patients, the editorial said. Both insulin and tolbutamide help control the amount of sugar in the blood, which is excessive in diabetes mellitus.

Real and serious problems will arise if tolbutamide is dispensed without a prescription and if it is used in patients for whom it "obviously is not indicated," the editorial said. It is most likely to help the diabetic who has a relatively mild case which developed after the age of 30.

It is especially important for the patient not to develop a careless attitude and for him to understand that the use of tolbutamide does not rule out dietary restrictions and other measures necessary to control the disease, the editorial said. Uncooperative patients should not be considered suitable for treatment with tolbutamide.

Much research has been done on tolbutamide; however, more remains, including learning what happens when the drug is administered for many years.

"In the meantime, physicians must warn their patients that this drug is not a true substitute for insulin but in carefully selected patients can be used instead of

insulin to control the blood sugar level," the editorial stated.

The editorial also listed some of the restrictions and precautions in the use of tolbutamide.

It cannot be used in patients with juvenile or growth-onset diabetes mellitus; unstable or "brittle" diabetes; a history of diabetic coma; maturity-onset diabetes complicated by severe ketosis, acidosis, coma, severe injury, gangrene, Raynaud's disease, or serious impairment of kidney or thyroid function; malfunctioning or disease of the liver, or diabetes adequately controlled by dietary restriction.

Any physician using tolbutamide should insist that during the initial test period the patient report to him daily and during the first month once weekly for examination. After the first month the patient should be seen at least once a month.

Compensation Cases in VA Hospitals to be Shifted

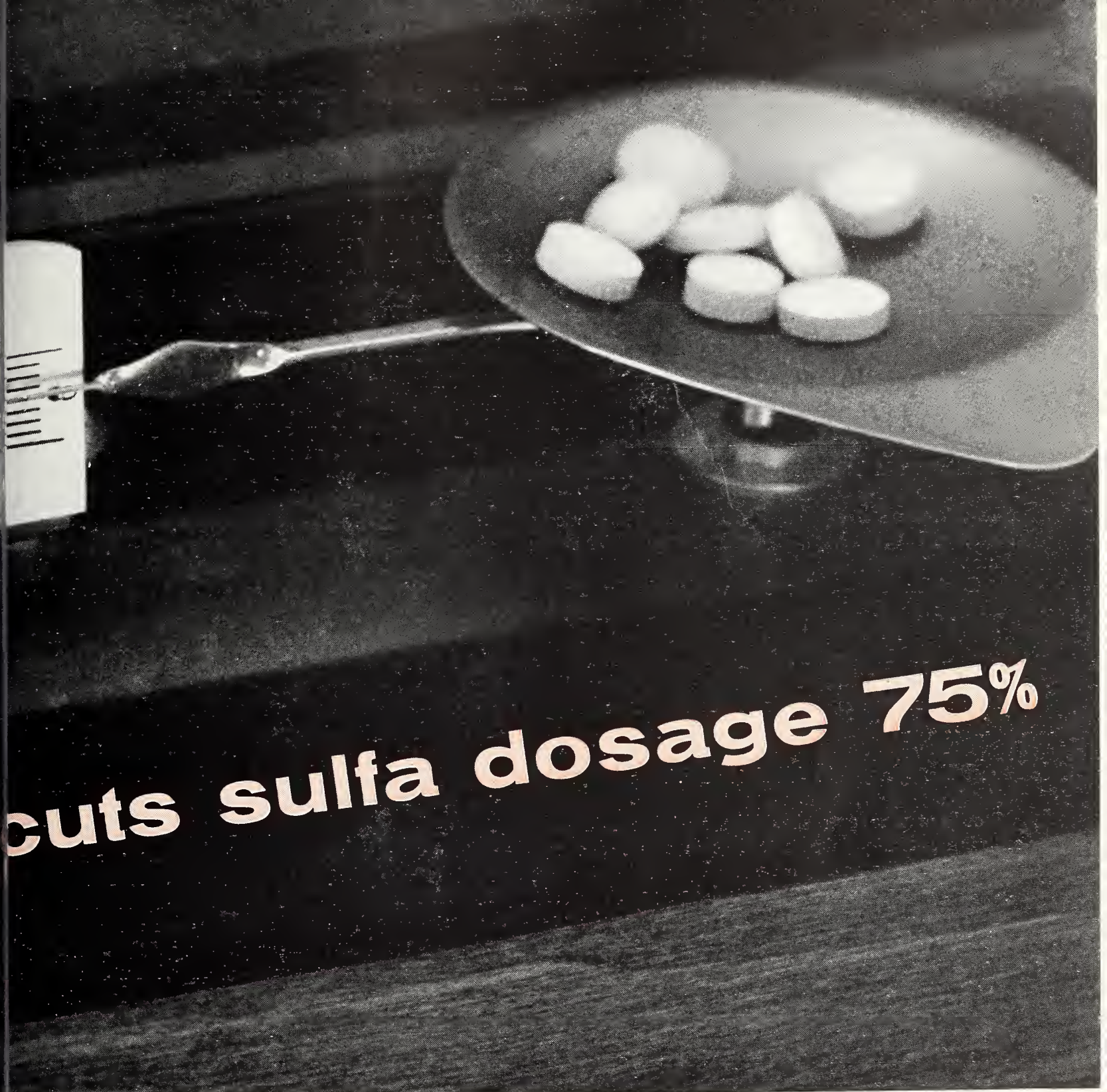
Veterans Administration is yielding to pressures by organized medicine and terminating hospitalization of nonservice-connected patients who are covered by workmen's compensation or other industrial accident insurance. All 173 VA hospitals have been directed to discharge or effect transfer of such patients as soon as their condition warrants. But no separation will be authorized, it emphasized, until it has been established the patient will receive such further hospitalization or treatment as is necessary, at no cost to himself.

For the past few years, medical societies in Oklahoma,
Continued on page 244



KYNEX 
SULFAMETHOXYPYRIDAZINE LEDERLE

antibacterial
effectiveness for 24 hours
on a single (1 Gm.) dose



cuts sulfa dosage 75%

KYNEX Sulfamethoxypyridazine is a completely new, long-acting single sulfonamide with clinical advantages hitherto unequalled in sulfa therapy—

LOW DOSAGE¹ — only 2 tablets per day.

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BROAD-RANGE EFFECTIVENESS — particularly efficient in urinary tract infections due to sulfonamide-sensitive organisms, including *E. coli*, *Aerobacter aerogenes*, paracolon bacilli, *Staphylococci*, *Staphylococci*, Gram-negative rods, diphtheroids and Gram-positive cocci.

GREATER SAFETY — high solubility, slow excretion and low dosage help avoid crystalluria. No increase in dosage is recommended;

the usual precautions regarding sulfonamides should be observed.

CONVENIENCE — the low maintenance dosage of 1 Gm. (2 tablets) per day for the average adult offers optimum convenience and acceptance to patients.

Each quarter-scored tablet contains: sulfamethoxypyridazine ... 0.5 Gm. (7½ grains).

1. Boger, W. P.; Strickland, C. S. and Gylfe, J. M.: *Antibiot. Med. & Clin. Ther.* 3:378 (Nov.) 1956.

NOW AVAILABLE
KYNEX[®] SYRUP

SULFAMETHOXYPYRIDAZINE LEDERLE

- Aqueous—readily miscible
- Caramel flavored
- Stable—no refrigeration needed
- Readily acceptable by patients of all ages

Each teaspoonful (5 cc.) of KYNEX Syrup contains 250 mg. sulfamethoxypyridazine.

U.S. Pat. Off.

LEDERLE LABORATORIES DIVISION, AMERICAN CYANAMID COMPANY, PEARL RIVER, NEW YORK



Texas and New York have been protesting VA's accommodation of cases eligible for compensation benefits. Reply was that a veterans hospital cannot legally close doors to an eligible patient who takes oath he cannot afford to pay for private care, regardless of insurance coverage he may possess. VA's latest action does not repudiate that principle but acknowledges such cases should be moved to private facilities as soon as practicable.

Bethesda Selected for National Library of Medicine

The building to house the new National Library of Medicine will be constructed on the grounds of the National Institutes of Health in Bethesda, Maryland, a Washington suburb. Nearby are the NIH Clinical Center and the Navy's Bethesda Hospital Medical Center.

Decision on the location was made by the library's board of regents at the board's second meeting. Under the law (passed last year) that created the National Medical Library out of the Armed Forces Medical Library, the surgeon general is to select the site, "in accordance with directions of the board."

Blood Tests Urged in All Paternity Suits

Blood-grouping tests should be carried out in uncontested paternity suits as well as in contested ones, a New York City physician and a lawyer said.

Tests for matching the child's blood with that of the supposed father are used now only when the accused man denies paternity. If the man admits paternity, he is not given a blood-grouping test.

However, a study of 67 "typical" cases in which the men admitted paternity in court showed that from 12 to 18 per cent of the men were probably not the fathers of the children they accepted in the court, according to Dr. Leon N. Sussman, attending physician at Beth Israel Hospital, and Sidney B. Schatkin, LL.B., assistant corporation counsel of the City of New York.

In addition, previous studies have shown that from 30 to 40 per cent of the men who deny paternity and who are given blood tests are falsely accused. Thus, in the interests of justice, a blood test should be ordered in every case involving a charge of paternity, the authors said in the (May 18, 1957) *Journal of the American Medical Association*.

The authors studied blood tests performed on involved persons after their uncontested suits were settled. The method was the usual one of duplicate testing by different technicians using different lots of blood serum. The three standard groupings, A-B-O, M-N, and Rh-Hr, were tested, as well as two lesser groups.

The tests indicated that of the 67 men involved, six "absolutely" were not the fathers of the involved chil-

dren. Since earlier studies have shown that tests using the three standard groups can clear only 50 per cent of falsely accused men, it follows that not six but 12 of these men were probably not the fathers of the children they accepted, the authors said.

They pointed out that testing must be restricted to qualified experts, since familiarity with the testing methods and a knowledge of blood factor heredity are essential. However, rapid air transportation makes the laboratory expert easily accessible.

Although the number of cases studied was small — due to difficulty in obtaining cooperation of persons after their cases were closed — the figures have "a significant bearing" on the reliability of admissions of paternity which are "routinely and perfunctorily" accepted daily in court, the authors stated.

The motivation for these admissions of paternity without scientific proof are interesting, they said. Usually a man admits to paternity for one of the following reasons: a sincere belief that he is the father; a sense of pride arising from the fact that he could be the father; no feeling of responsibility; inability to afford defense and blood tests costs, or a misunderstanding of the meaning of paternity.

A.M.A. Membership Shows Increase

The A.M.A. membership reached 164,128, highest in history, as of last April 30th.

Robert Enlow, head of the A.M.A. membership department, explained that the increase in the A.M.A. service membership probably resulted from changes in the constitution and by-laws admitting members of the reserve components, rather than from any substantial increase in the number of physicians entering the government services and the Armed Forces.

A breakdown of the membership figures follows:

Kind of Member	A.M.A. Membership April 30, 1956	A.M.A. Membership December 31, 1956	A.M.A. Membership April 30, 1957
Dues Paying	132,341	134,307	136,381
Dues Exempt	11,200	10,554	9,817
(Total Active)	(143,541)	144,861	(146,198)
Associate	5,892	6,095	5,856
Service	8,649	9,660	11,713
Affiliate	269	279	273
Honorary	94	93	88
Total	158,445	160,988	164,128

Action on Amphetamines Exaggerated in Papers

Press furor over U.S. about the A.M.A.'s ostensibly spectacular crackdown on illicit use of amphetamines,

particularly by athletes, is difficult to understand when one observes what action was actually taken. All the House did was adopt a resolution which (1) says *indiscriminate* administration of stimulants such as amphetamine is dangerous, and (2) directs the board of trustees to inquire into "the frequency of the indiscriminate use of these agents, particularly in relation to athletic programs."

The allegations that amphetamines are used widely by teen-age track performers were *not* made by A.M.A. but, rather, were aired at a reference committee hearing on a New York resolution requesting an investigation and later at a press conference.

More Doctors Complaining on Social Security Exclusion

The staff of the House Ways and Means Committee reports an increasing volume of correspondence from physicians plaintively asking why they are denied social security coverage. Stock reply is that the A.M.A. wanted it that way. Note: No action seen this year on the Keogh-Jenkins retirement plan, but it could be enacted in 1958 if there is an income tax cut.

Supreme Court Asked to Review "Filthy" Plasma

A Tennessean who developed serum hepatitis about two months after receiving an infusion of blood plasma is appealing to the U. S. Supreme Court from a judgment which rejected his contention that the plasma was adulterated with a virus and therefore "filthy" within meaning of law. Principals in this interesting case, which hinges on liability of the producer of a biological or drug containing an invisible contaminant which defies advance detection, are Floyd E. Kidd and Merck & Company. The former won his \$50,000 suit for damages but the 6th Circuit Court of Appeals set judgement aside on grounds that a directed verdict in favor of Merck should have been ordered by trial court.

Negligence Not Involved

Kidd's suit charged no direct negligence. Its basis was that the plasma was adulterated because a virus is "a filthy substance" and Tennessee law holds a drug to be adulterated "if it consists in whole or in part of any filthy, putrid or decomposed substance." But the appellate court questioned propriety of "filthy" to describe an innocently introduced microorganism. Note: Kidd had been injured by a power saw and he received the plasma transfusion before undergoing emergency surgery. His recovery was uneventful and he was discharged from the hospital a week later.

"In its broader aspects," said the appellate court's judgment, "the question is whether the occasional victim of the disease of serum hepatitis, caused by the presence of the hepatitis virus in blood plasma,

must bear the entire burden of the disease, or whether that burden should be shared by plasma manufacturers and ultimately by society as a whole."

"The Tennessee statute tacitly recognizes," it continued, "that many valuable drugs can or may contain substances of potential injury to health. Their use often involves the acceptance of a calculated risk by the physician who prescribes them. The physician in the present case accepted just such a risk."

A.M.E.F. Gets Two Big Checks

Two checks totaling nearly \$300,000 were turned over to the American Medical Education Foundation at the recent annual A.M.A. meeting in New York.

One check in the amount of \$170,450 represented contributions from every member of the Illinois State Medical Society. The figure exceeded by \$5,000 a record set by the Illinois society last year.

Dr. Lester S. Reavley, president of the state society, said that other contributions by the Illinois doctors would run this year's total to more than \$200,000. Illinois doctors have already contributed more than a million dollars to the fund, placing the state society on top of the list of state medical society donors. Illinois recently voted an allocation of \$20 per member to the A.M.E.F.

Chiropractic Officers in Army is Bill's Aim

S. 2072 was dropped in the Senate hopper last week. Its sponsor is Senator Francis Case (R., S.D.). The bill's purpose is to establish a Chiropractic Section in the Medical Service Corps of the Army. The M.S.C. of the Navy and Air Force would not be so favored. S. 2072 was referred to the Armed Services Committee, which is not expected to give it a high priority.

Lab & X-Ray Technicians Unionized for Higher Pay

Launched recently in Washington, a national campaign is fanning out with the objective of organizing laboratory and X-ray technicians in order to obtain higher pay and better working conditions. The Office Employees' International Union (A.F.L.-C.I.O.) is the parent union of the newly established Federation of Technical, Medical Personnel. J. Howard Hicks, secretary-treasurer of the O.E.I.U., estimates that 10 per cent of all civilian medical and X-ray technicians in Greater Washington have joined the union since its initial organization meeting there on April 1.

Locals will be formed in other metropolitan areas in the near future, according to Hicks. New York City, Chicago, Detroit and Los Angeles reportedly are next in line. The aim is not to obliterate or compete

Continued on page 251

Maine Medical Association

STANDING COMMITTEES — 1957-1958

Standing Committees for 1957-1958 as proposed by the Nominating Committee and approved by the Second Meeting of the House of Delegates of the Maine Medical Association at Rockland, Maine, June 23, 1956.

Nominating Committee

1st District, C. PHILIP LAPE, M.D., Portland
2nd District, DANIEL R. SHIELDS, M.D., Lewiston
3rd District, JOHN F. ANDREWS, M.D., Boothbay Harbor
4th District, GEORGE E. SULLIVAN, M.D., Fairfield
5th District, JAMES H. CROWE, M.D., Ellsworth
6th District, WILBUR B. MANter, M.D., Bangor, Chairman

Scientific Committee

Edward G. Asherman, M.D., 31 Deering St., Portland
 (1 yr.) — Chairman
 Richard H. Dennis, M.D., 33 College Ave., Waterville (2 yrs.)
 Daniel R. Shields, M.D., 369 Main St., Lewiston (3 yrs.)

Committee On Medical Education And Hospitals

Charles F. Branch, M.D., Central Maine Gen'l Hosp., Lewiston
 (1 yr.) — Chairman
 H. Draper Warren, M.D., 18 Sweden St., Caribou (1 yr.)
 Richard C. Wadsworth, M.D., 489 State St., Bangor (2 yrs.)
 Paul H. Pfeiffer, M.D., 16 Gilman St., Waterville (3 yrs.)
 William L. MacVane, Jr., M.D., 211 State St., Portland (3 yrs.)

Medical Advisory Committee

Thomas A. Martin, M.D., 203 State St., Portland — Chairman
 Gerald H. Donahue, M.D., 4 Station St., Presque Isle
 Philip L. Gray, M.D., Blue Hill
 Robert J. Hughes, M.D., 54 Penobscot St., Bangor
 C. Harold Jameson, M.D., Medical Arts Bldg., Rockland
 George L. Maltby, M.D., 31 Bramhall St., Portland
 The Secretary — ex officio

Public Relations Committee

Donald F. Marshall, M.D., 142 High St., Portland (3 yrs.) —
 Chairman
 Paul E. Floyd, M.D., 2 Middle St., Farmington (1 yr.)
 Roger J. P. Robert, M.D., 331 Main St., Saco (1 yr.)
 Robert J. Barrett, Jr., M.D., 209 State St., Bangor (2 yrs.)
 Harry M. Helfrich, Jr., M.D., 555 Main St., Presque Isle
 (2 yrs.)

Legislative Committee

Wilson H. McWethy, M.D., 31 Western Ave., Augusta
 (2 yrs.) — Chairman
 M. Tieche Shelton, M.D., 21 Western Ave., Augusta (1 yr.)
 James E. Poulin, M.D., 177 Main St., Waterville (1 yr.)
 John F. Andrews, M.D., 20 West St., Boothbay Harbor (3 yrs.)
 Charles A. Hannigan, M.D., 85 Goff St., Auburn (3 yrs.)

Investment Committee

Elton R. Blaisdell, M.D., 12 Deering St., Portland — Chairman

Emerson H. Drake, M.D., 18 Bramhall St., Portland
 Paul S. Hill, Jr., M.D., 323 Main St., Saco

Rural Health Committee

Howard H. Milliken, M.D., 105 Second St., Hallowell
 (2 yrs.) — Chairman
 Arthur P. Reynolds, M.D., 420 Main St., Presque Isle (2 yrs.)
 Philip B. Chase, M.D., 36 Main St., Farmington (1 yr.)
 Henry A. Hudson, M.D., 11 Gage St., Bridgton (1 yr.)
 Robert F. Russell, M.D., Penobscot (3 yrs.)

Health Insurance Committee

Linus J. Stitham, M.D., 50 Main St., Dover-Foxcroft (1 yr.) —
 Chairman
 Louis A. Asali, M.D., 29 Deering St., Portland (1 yr.)
 Francis A. Winchenbach, M.D., 910 Washington St., Bath
 (1 yr.)
 Waldo A. Clapp, M.D., 215 College St., Lewiston (2 yrs.)
 Kenneth W. Sewall, M.D., 2 School St., Waterville (2 yrs.)
 Clyde I. Swett, M.D., 18 Sherman St., Island Falls (2 yrs.)
 Samuel L. Belknap, M.D., Damariscotta (3 yrs.)
 Edward K. Morse, M.D., 22 White St., Rockland (3 yrs.)
 Philip P. Thompson, Jr., M.D., 704 Congress St., Portland
 (3 yrs.)

Representing County Medical Societies:

Robert O. Kellogg, M.D., 316 State St., Bangor (Penobscot)
 Paul A. Fichtner, M.D., 6 Pleasant St., Rangeley (Franklin)
 Harland G. Turner, M.D., R.F.D. #2, Norridgewock (Somerset)
 Dwight Cameron, M.D., Rockend Road, Northeast Harbor (Hancock)
 George L. Temple, M.D., 18 Franklin St., Belfast (Waldo)
 Hazen C. Mitchell, M.D., Calais (Washington)
 Alexander W. Magocsi, M.D., York (York)

Committee On Credentials

John F. Dougherty, M.D., 112 Front St., Bath (1 yr.) —
 Chairman
 Paul A. Fichtner, M.D., 6 Pleasant St., Rangeley (1 yr.)
 Steven A. Cobb, M.D., 34 Winter St., Sanford (2 yrs.)
 Thomas Anton, M.D., 260 Main St., Biddeford (3 yrs.)

L. Armand Guite, M.D., 45 Elm St., Waterville (3 yrs.)

Board Of Ethics And Discipline

Alvin A. Morrison, M.D., 57 Deering St., Portland (2 yrs.) —
Chairman

Edmund N. Ervin, M.D., 2 School St., Waterville (2 yrs.)
Dexter E. Elsemore, M.D., Dixfield (1 yr.)
Gordon N. Johnson, M.D., P. O. Box 86, Houlton (1 yr.)
Karl V. Larson, M.D., East Machias (3 yrs.)
William F. Mahaney, M.D., 338 Main St., Saco (3 yrs.)

ANNUAL REPORTS 1956-57*

Council

First District — EUGENE E. O'DONNELL, M.D.

During the past year, I have attended two meetings of the York County Medical Society. It is the custom in York County, because of considerable distances between the two ends of the County, to alternate the place of the meetings from one section of the County to another, in order to secure maximum attendance. It seemed to me that this is a very wise custom.

It is my distinct impression that York County Medical Society is in a very healthy state, and that the calibre of the scientific meetings is excellent.

The Cumberland County Medical Society has held five meetings during the past year, with an average attendance of fifty-five. Two have been scientific meetings; and three have been strictly business meetings.

The problem of attendance at the County Society meetings in a neighboring community where hospital staff obligations require so much time, is one which will, some day, have to be solved.

The scientific sessions associated with the Cumberland County Medical Society have been excellent.

Second District — ALCID F. DUMAIS, M.D.

During the past year, the councilor attended meetings in Androscoggin and Oxford counties. Because of conflicting dates, it was not possible, unfortunately, to visit the Franklin County Society. However, I have talked with the President of this last society and obtained the necessary information for this report. The activities of these societies during the last year lead us to reach three broad conclusions:

- A. The interest is increasing regarding the socio-economic aspects of medicine.
- B. Medico-legal problems are more frequently discussed and noted; also was an increased demand for discussions of these topics.
- C. Medical education, nursing shortage and health insurance — all were topics that were actively discussed.

This alertness on the part of the members is a healthy sign. These problems will only be properly understood if the members continue to show an interest. Their solution and further progress can only be achieved by a full understanding of their imports.

I wish to thank all county groups for their co-operation during my term as councilor. I enjoyed serving them.

Third District — ROBERT L. ALLEN, M.D.

Everything seems to be running smoothly in District Three of the Maine Medical Association.

During the past year, Dr. Charles D. North of Rockland, a practitioner for fifty years, passed away.

Dr. Herman Weisman and Dr. Donald Brown of Knox County have both left the county. The former has commenced practice in California, while the latter is a resident in anesthesiology at the Maine Medical Center.

Dr. Johan Brouwer from Hartford, Connecticut and Dr. Robert Eddy from Cooperstown, New York, both have opened offices for the practice of Internal Medicine in Rockland. During the past year, both the Lincoln-Sagadahoc and Knox County Societies have been continuing their postgraduate education program by holding clinical sessions at their monthly meetings.

Speakers have been procured through the Bingham Fund, and have contributed a great deal to the furthering of post-graduate education.

Fifth District — RAYMOND E. WEYMOUTH, M.D.

This constitutes a very brief annual report of conditions in the Fifth District of the Maine Medical Association.

The Hancock County Medical Society has had an active and progressive year with nine regular and one special meeting (s). It has increased its membership by at least three new members. There have been some unfortunate inter-medical hospital relationships — of which the Council is thoroughly aware — which will eventually be ironed out at the County level. I have attended practically all of the meetings which this society has held.

I have had some notices of scheduled meetings of the Washington County Medical Society, but because of a heavy conflicting schedule, have been unable to attend. However, I believe that Society is active and in good condition.

Sixth District — ALLAN WOODCOCK, M.D.

As Councilor of the Sixth District, in accordance with the By-Laws that each one shall make an annual report of conditions "in his District at the annual meeting of the House of Delegates," I submit the following: I attended a meeting of the Piscataquis County Medical Society on September 20, 1956 at the hotel in Greenville, and on May 16, 1957 at the camp of Dr. George Howard at Whetstone Pond. These meetings had, as usual, just about 100% attendance. The problems of the Society were discussed in a frank, open and friendly manner. This Society is getting along in excellent fashion.

On May 29, 1957, I attended the meeting of the Aroostook County Medical Society in Caribou. This was a most pleasant meeting. It was a very progressive crowd. I was particularly impressed by the detailed report of the retiring Secretary and Treasurer, Dr. Clyde I. Swett, and their splendid financial condition. There was no formal paper. I am sure the condition of this Society is excellent. The Penobscot County Medical Society is in good health, under the able leadership of Dr. John J. Pearson of Old Town. I have attended all the meetings of the Council.

*Presented at the 104th Annual Session of The Maine Medical Association, June, 1957.

Report Of Delegate To A.M.A. House of Delegates Annual Session — 1957

In reporting to you of the meeting of the House of Delegates of the American Medical Association, I should like first to say that you have a group of thoughtful, capable and hard-working men at the top. They know what is going on and are doing their best to serve your long range interests as they see them. They need your support, co-operation and ideas. The Board of Trustees holds the reins, and the Chairmen and members of the Standing and Special Committees are the work horses. A tremendous responsibility is given the Reference Committees who work for two days only during the session. It is up to them to listen to biased viewpoints, collect facts, filter out the emotional head and make decisions for the good of the whole profession. The House of Delegates largely abides by their decisions.

It might seem to you in the recent decisions of the House of Delegates that they are dodging issues — namely corporate practice of medicine by unions, hospitals and companies. Guides for action in dealing with these matters have been drawn up in detail by committees set up for this purpose. Their failure to be specific allows every physician, medical society or group, a certain leeway in handling their own specific problem. The A.M.A. stands ready to back up any member society.

Next I wish to present to you the principal thoughts of our Past President, Dr. Murray, and President, Dr. Allman.

Dr. Murray stressed the necessity of combining modern scientific methods with the personal friendly touch of the one-time family physician, urging more tender loving care for the patient by his physician. Along the same lines he advised, "Never content yourself by doing your second best, however unimportant the occasion." To illustrate this second best effort, he cited the principal complaints that patients have against their doctor — not being available when needed, lack of willingness to answer week end, night and holiday calls and overcharging. He then went on to emphasize the importance of satisfying your patients in these and other respects by stating, "Satisfied patients always will be our first line of defense against government domination of our profession. I know it is a difficult task to please every patient, but I ask you: Would it be easier to practice medicine as a servant of government?"

In conclusion, Dr. Murray urged each of us to "continue to adopt positive programs of action and service for the public and be prepared to make even greater far-reaching decisions in the future."

From what I have been able to learn and see of the effects of his presidency, his parting words in those of Sir William Osler, "To have striven, to have made an effort, to have been true to certain ideals — this alone is worth the struggle," express what he accomplished during the past year.

Our President, Dr. Allman, is alarmed that we are not keeping pace socially as we have medically in our efforts to provide good care for the American people.

He is also concerned that there is a widespread sentiment among many doctors that we should line up at the "public trough" for government handouts for research, medical education, support for surveys in medical care and socio-economic fields, etc. He feels that if we think these things are worthy enough, we should attempt to get private funds or A.M.A. funds for this work. He feels that our position of supporting economy in the government would be weakened if we were to get in line for the big give-away.

The following remarks are of sufficient interest to this society at the present time to quote them more in detail. These relate to "third party" contractual arrangements (Blue Shield in our case) which call for fixed fee schedules. Dr. Allman's concern in this area is not related to physicians' incomes, but

to fundamental dangers in standardized fees. Expediency, laws and governmental regulations have encouraged us to accept fees for specified groups, especially those in certain income brackets. We now find many prepayment plans raising their income ceilings to include the majority of our population. In his opinion the pressure for this action is related primarily to competitive factors. It has the inherent danger of ultimately affecting the quality of care rendered and should be carefully watched.

Medicine has operated in a competitive climate that fosters incentive, rewards ability and smothers mediocrity. Medicine has had to yield although every effort has been made to retain its basic tenets. Medicine has yielded to mechanisms which restrict the seller's rights to seek a reasonable price for his service, but only when it was convinced that the only alternative was submission to even less acceptable conditions.

He went on to say that if we really believe in our contention that a leveling or averaging process inevitably tends to destroy individuality and initiative, then there is cause for concern and a need for constant vigilance on the part of the physician.

He then quoted from Clarence Randall's book, *The American Way*. "The outward manifestation of the American system at work is freedom of choice for the individual in every activity of his life and the means of satisfying his own needs as he conceives them to be needs, the more willingly will he give of his best efforts in order that those ends may be attained."

The A.M.A. has consistently supported the service and indemnity approach as means of assisting the general public in financing health care. This has resulted in the opportunity to test and adopt or reject many different prepayment concepts.

He then cited the experiments which he apparently favors: the "Wisconsin Plan" of no fee schedule nor income ceiling; major hospital and medical expense plans which provide a greater bulwark of protection, and at the same time, have built-in controls against abuse; and plans with deductible and co-insurance provisions.

In short, he advises us 1) to be wary of being pressurized by competitive factors, 2) to avoid plans which limit free choice and initiative or breed mediocrity, and 3) plans which advertently or inadvertently increase usage of hospital and medical services, thus increasing the cost of medical care.

He wishes us to consider favorably those plans which have 1) built-in curbs against abuse both by patient and physician, 2) usual fee for service without fixed fee schedule, 3) have deductible and co-insurance features and 4) give protection against catastrophic illness for all age groups.

The Board of Trustees reports and committee reports, as well as seventy resolutions, covered 196 typewritten and written pages. These varied from repeal of the income tax to having the A.M.A. collect its own dues.

Many of the resolutions from the states dealt with the problem of free choice of physician and urged the A.M.A. to adopt specific limitations on physicians in dealing with third party control of medical practice. The A.M.A. reaffirmed its position supporting the free choice principle.

In an attempt to summarize the action on the problems of special interest to us in Maine, I shall briefly state the result.

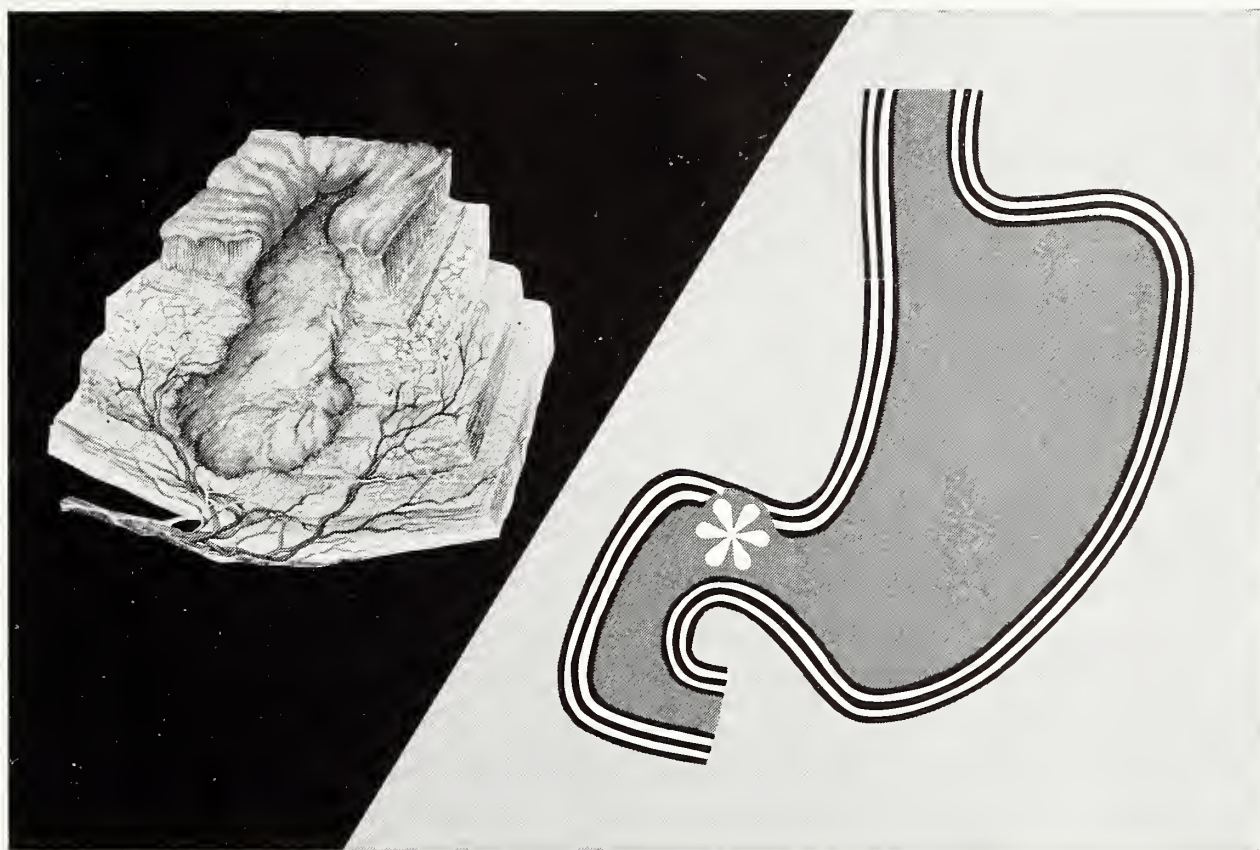
1. Workmen's compensation cases are not to be covered at V.A. Hospitals or by Blue Shield.

2. Government is to provide health service to civil service employees only for occupational hazard.

3. Medical care provided by interns and residents is not to be charged by hospital to government, Blue Shield or any other agency.

Continued on page 256

BROAD ANTICHOLINERGIC BLOCKADE



Pro-Banthine® Relieves Pain, Accelerates Peptic Ulcer Healing

The efficiency of Pro-Banthine (brand of propantheline bromide) in inhibiting the chemical substance which mediates parasympathetic gastric activity explains the success of the drug in ulcer therapy. Pro-Banthine blocks acetylcholine at both the ganglia and parasympathetic effector sites. This dual action controls excess neural stimulation of both gastric secretion and motility.

The therapeutic benefits of this anti-

cholinergic blockade consist, as many clinical investigators have noted, in prompt relief of ulcer pain and pronounced acceleration of ulcer healing.

The suggested initial dosage is one 15-mg. tablet with meals and two tablets at bedtime. Two or more tablets four times a day may be indicated in severe manifestations. G. D. Searle & Co., Chicago 80, Illinois. Research in the Service of Medicine.

SEARLE



DEAN H. FISHER, M.D.
COMMISSIONER

State of Maine

Department of Health and Welfare

Review Of Health And Welfare Legislation

The legislative session just completed was an interesting and productive one which gave sympathetic consideration to a wide variety of proposals relating either directly or indirectly to interests of the Department. Some of the legislative decisions have medical implications of greater or lesser degree, and it may be of interest to point out some of these relationships. However, before doing so, it may be useful to outline some of the changes that will necessarily take place in the poliomyelitis immunization campaign as a result of the expiration on June 30 of the special Federal poliomyelitis act.

This Federal program has provided approximately 500,000 cc.'s of vaccine for use in pregnant women and people under the age of 20 years. To purchase and distribute vaccine, purchase services, materials, etc. for this activity, the Department spent something over \$450,000 of Federal funds.

After July 1, we will have only limited State funds and relatively small amounts of non-special Federal money that may be used for this purpose. Therefore, we will not be able to do anything more than provide vaccine in limited amounts to communities that will assume the other necessary financial responsibilities, and perhaps loan equipment. Priority for vaccine will be given to those areas or groups that appear to be below average levels of immunization. Basically, it is felt that the non-immune backlog has now been reduced to the point where immunizations can be carried on by the same means and through the same methods that are used for other types of immunizations. Poliomyelitis immunization should now be carried out by physicians, health departments, and other local agencies on a routine, around the calendar basis.

Some of the more interesting State legislation may be summarized or discussed briefly as follows:

- (1) Committees on mental health, mental retardation, and problems of the aging were created or revived.
- (2) The Maine Medical Association's proposal for legislative approval of a formal tri-state medical needs committee was accepted, and the compact will undoubtedly be of future value.

- (3) Probation and parole systems were revamped.
- (4) Clinic services at the mental institutions were strengthened.
- (5) The necessity for billing towns of settlement for the care of tuberculosis patients in the sanatoria was removed, and the Department was given complete freedom to make such charges as it chooses. From a practical point of view, the expenses of collections have not justified the charges, and it is obvious that few, if any, patients can afford to pay any realistic portion of the cost of this care. Therefore, in the future, we expect to make very few, if any, charges for sanatorium care.
- (6) The tuberculosis commitment law was broadened to permit the initiation of legal action by any full-time local health officer, as well as by departmental staff.
- (7) The statutory basis for our vital statistics was completely revised, although the changes may not be apparent to the casual observer. The major change relates to the town clerk who will now provide us with the original of his records rather than with copies. The new system will minimize his work and provide quicker and more accurate records. It should be unnecessary to remind physicians that the accuracy, currency, and value of birth and death records are directly related to the care and promptness with which the physician prepares the originals. Perhaps this is a good time to urge physicians to give these records the attention their importance necessitates.
- (8) One interesting change in the general field of sanitation was the transfer from the Public Utilities Commission to the Department of Health and Welfare of responsibility for supervising and establishing the standards for operation of public water systems. The whole matter of their supervision has been confusing and uncertain because neither duties nor responsibilities have previously been clearly provided for in statute.
- (9) Technical changes in welfare programs are prob-

ably not of enough general interest to warrant discussion, but there is one point worth mentioning. As these programs are changed to increase caseloads, more people become covered by our hospitalization program and the load on the hospital aid appropriation diminishes with a consequent increase in the rates payable from that fund.

- (10) The Hospital Aid appropriation was increased 50% to an annual sum of \$828,000.
- (11) From the point of view of the physician, the appropriation of \$500,000 per year for the purchase of nursing home care for welfare recipients was probably the most significant legislative act. If our estimates of the demand for this care are correct, the funds available will not permit us to pay the entire cost of the service. There will be a balance that will have to be paid by municipalities or other sources. Therefore, the program will be comparable to hospital aid in that fixed rates of payment will not be established. The decision to admit to or discharge from nursing home care will be a medical one into which the department will not enter. However, we will not expect to be paying for purely boarding care, and only recognized nursing homes will be eligible to receive payment. It has been felt that the lack of a means of securing nursing home care has been the greatest single untouched need among welfare recipients, particularly in the aged

and disabled categories. We expect that the ability to purchase such care will improve general standards of care, stimulate the development of facilities where none now exist, minimize the need for hospitalization and thus tend to increase rates that may be paid from both the pool and hospital aid, spare municipal funds, and, finally, provide a service proved to be essential by the departmental study done last year.

- (12) The needs of the 10,000 children in the program of aid to dependent children were given a great deal of consideration. The final result was an added appropriation of \$50,000, to which we expect we may be able to add an equal amount of Federal matching. The discussions which prompted this appropriation revolved about the possibility of providing a medical care program. However, it is obvious that no general care program could be developed from these funds. Thus, our plans for the use of this money are not yet clearly established, but the probabilities are that some type of limited program intended to meet some of the major medical needs of this group will be developed.
- (13) The legislature made an interesting appropriation of \$5,000 and with it authorized the Department to establish one or more centers for diagnosis, consultation, treatment, or other services for children with cystic fibrosis.

Across The Desk — *Continued from page 245*

with technicians' societies or registries, he told WRMS, but to achieve the salary raises and fringe benefits which professional groups cannot or will not get for members.

"These people are woefully underpaid," he said.

"The goal is to bring them the compensation and benefits to which they are entitled by the training and the importance of their work. The laboratory and X-ray technicians are being organized first. Later, it is planned to bring in other allied professions, including nurses, perhaps."

Doctor Contributions to Medical Schools

The American Medical Education Foundation reports that physicians gave well over three million dollars to medical education in 1956.

The A.M.E.F. just released data giving a breakdown of physician contributions to medical education last year. For the first time, this also includes information on contributions made through alumni campaigns. The report showed:

In 1956, 84,657 doctors gave a total of \$3,320,152.14 to the country's 83 medical schools. This total included

\$1,072,727 given through the A.M.E.F. by 39,892 doctors, and \$2,247,425 given directly to the medical schools by 44,765 doctors.

The A.M.E.F.'s million-plus contribution is to be used at the discretion of the schools. The new information shows that most of the contributions made through alumni campaigns are also "unmarked," that is, they may be allocated as the deans of the individual schools see fit.

Physicians go to Universities for Postgraduate Study

Physicians, who like to keep abreast of "what's new" in medicine, prefer to go back to medical schools for additional training instead of relying exclusively on courses at medical meetings, hospitals, or seminars.

The number of courses, excluding medical society meetings, held in the continental U. S. during the nine-month period from September 1, 1955 to June 1, 1956, was 886, with a total physician attendance of 37,081.

Medical schools offered half of the courses and 36 per cent of the hours, according to a recent report by AMA.

News and Notes

Maine Hospital Association Elects Officers

At its meeting in Rockland, June 12, the Maine Hospital Association elected as its president, Lawrence M. MacDougall, administrative assistant at Eastern Maine General Hospital in Bangor.

Matthew I. Barron, Portland Health and Welfare Department chairman, became president-elect. Willard Mosher, business manager of Webber Hospital, Biddeford, is treasurer; Donald M. Rosenberger, director of Maine Medical Center, Portland, is secretary; and Daniel G. Falvey, Webber Hospital administrator, was named delegate to the American Hospital Association.

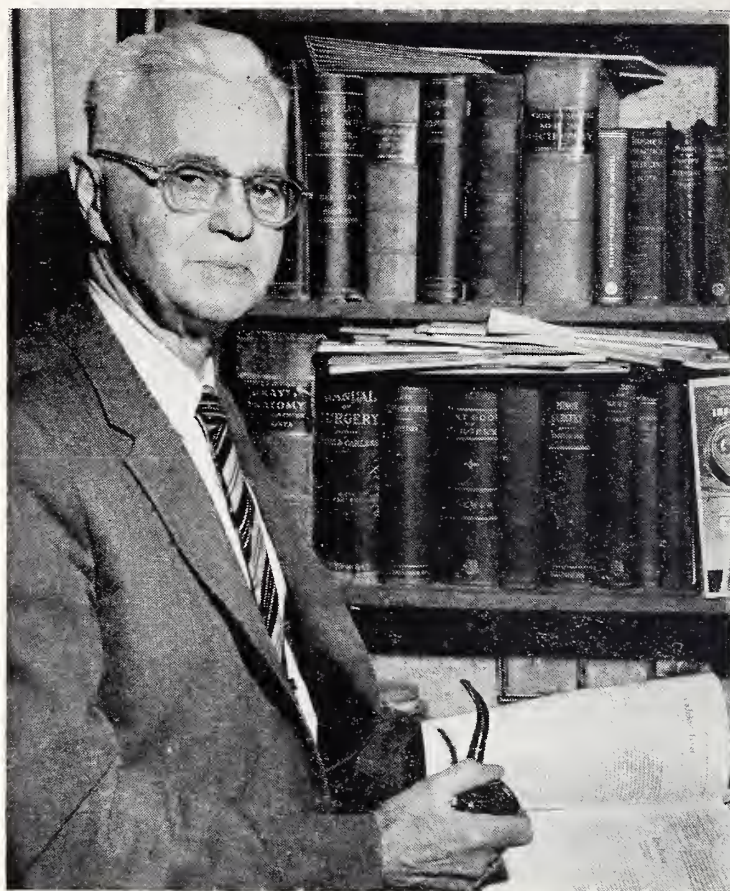
Maine Radiological Society Officers

At the recent meeting of the Maine Radiological Society the following officers were elected: President, John T. Konecki, M.D., Lewiston; Vice-President, Irving L. Selvage, Jr., M.D., Portland; Secretary-Treasurer, Francis J. O'Connor, M.D., Augusta.



Portland Physician Honored

Isaac M. Webber, M.D., of Portland, was awarded an honorary Doctor of Science degree at the 152nd Commencement of Bowdoin College, Brunswick. Dr. Webber, of the Class of 1917, and a graduate of Bowdoin Medical School was honored on the 40th anniversary of his class.



(Bangor Daily News Photo)

"Thank You" Dr. Weatherbee

The town of Hampden and several other Maine communities gathered together recently for a day's celebration to say, "Thank you," to George B. Weatherbee, M.D., who has served the people of Maine in the practice of medicine and in civic affairs for forty-five years.

As part of the tribute, the new Hampden Consolidated School was named the Dr. George B. Weatherbee School. More than 700 people filled the Hampden Academy gymnasium and presented the Doctor with a leather chair.

Among the speakers for the occasion were John J. Pearson, M.D., of Old Town, president of the Penobscot County Medical Association and Leroy H. Smith, M.D., of Winterport.

County Association Pays Tribute To Former Secretary-Treasurer

Herbert C. Scribner, M.D., of Bangor, who served as Secretary-Treasurer of the Penobscot County Medical Association for eighteen years, was honored at the annual Ladies' Night of the association at the Penobscot Valley Country Club on May 28, 1957.

Allan Woodcock, M.D., speaking for the association, paid tribute to Dr. Scribner "for the quiet and efficient manner in which he had served the association as secretary for eighteen years." John J. Pearson, M.D., president of the association, on behalf of the association, presented Dr. Scribner with a desk set properly inscribed and a bouquet with a telephone arrangement and the message "Call for Dr. Scribner."

There were approximately one hundred and twenty-two members, their wives and guests present.



(Bangor Daily News Photo)

Head Table at Penobscot County Dinner Honoring Dr. Scribner

Left to right: Warren G. Strout, M.D., Bangor, secretary; Mrs. Strout; John J. Pearson, M.D., Old Town, president; Dr. and Mrs. Scribner; Mrs. Pearson; Mrs. Allan Woodcock and Dr. Woodcock, Bangor.

Washington County Medical Society

The regular meeting of the Washington County Medical Society in conjunction with the Calais Hospital Staff Meeting was held at the V.F.W. Hall, Eastport, May 24, 1957. An excellent roast beef supper was served by the V.F.W. Auxiliary. Hazen C. Mitchell, M.D., of Calais, President, conducted a brief business meeting of the Society. A minute's silence was observed in memory of Oscar F. Larson, M.D., a member of the Society who passed away April 10, 1957. Perley Mundie, M.D., of Calais, was named delegate to the Maine Medical Association in place of Dr. Oscar Larson. Robert G. MacBride, M.D., of Lubec, was named alternate. The speaker of the evening, Gerald Aronson, M.D., of the Pratt Diagnostic Hospital, Boston, Massachusetts, was intro-

duced by Edwin Johnston, M.D., of St. Stephens, N. B. Dr. Aronson spoke on "Management of Chronic Renal Disease." He mentioned the many problems that chronic renal disease produces, such as alteration of normal blood values, and inability of the kidney to concentrate. He spoke of the dangers of routine catheterization, particularly post-operatively when infection is very often produced. Infection in chronic renal disease results in a serious and often fatal complication. This was followed by active discussion. The wives of the members were entertained at the home of Mrs. James Bates of Eastport. Karl V. Larson, M.D. Secretary

Necrologies

HENRY W. BECK, M.D.
1894 - 1957

Henry W. Beck, M.D., 63, of Gray, died June 4, 1957, after a year's illness. Dr. Beck was born in Lawrence, Massachusetts, April 24, 1894, son of Paul O. and Emma A. Beck. He graduated from Mount Herman School, Northfield, Massachusetts, attended Bowdoin College, and took a pre-medical course at Harvard. He received his medical degree in 1927 from the University of Vermont Medical School. He interned at the Central Maine General Hospital, Lewiston, and began his practice in Gray, in July, 1928. He was a member of the American Medical Association, Maine Medical Association, and the Cumberland County Medical Society. He was on the associate staff of the Maine Eye

and Ear Infirmary, and the Mercy Hospital, Portland, and the Central Maine General Hospital. Dr. Beck was a member of the Congregational Church where he served as trustee and deacon. He was a member of Cumberland Lodge of Masons, the Boaz Chapter, 32nd Degree Scottish Rite, Valley in Portland, and a member of Kora Temple. He served in World War I and was a member of Gray Post, American Legion and of the Gray Kiwanis Club. He leaves his widow, Mrs. Annie Mae Scruton Beck; a son, Henry W. Beck, Jr., Wethersfield, Connecticut; a daughter, Dorothy Anne Beck, New York City; and a brother, Oswald T. Beck, Cleveland, Tennessee.

GEORGE E. DESAULNIERS, M.D.
1884 - 1957

George E. Desaulniers, M.D., 72, of Lewiston, died May 20, 1957.

Dr. Desaulniers was born April 30, 1884, in Melbourne, Province of Quebec, the son of Henri and Mary Anne Dearden Desaulniers. He received his primary and secondary education in Windsor and in 1912 he entered McGill University, four years later receiving his degree of Master in Surgery and his Doctorate in Medicine. One year of internship at the Montreal General Hospital was followed by two years' residency at the Montreal Maternity Hospital.

In 1919 he settled in Lewiston and the following year was admitted to the Staff of St. Mary's General Hospital and later served as Staff President. He was the attending physician at the Healy Asylum and of the Marcotte Home and for thirty-five years was surgeon for the Grand Trunk Railroad. He was a member of the Maine Medical Association and the Androscoggin County Medical Society.

He is survived by his widow, Dr. Lucy O'Connell Desaulniers; one daughter, Mrs. Paul (Jane) Hazelton of Topsham; one son, Robert H. Desaulniers, of Boise, Idaho; and five grandchildren.

George E. Desaulniers was a man of happy spirit who seemed to brighten every life he touched. He had a warm and generous heart and was of a buoyant and joyous nature, full of energy with one desire — that of increasing the happiness of those about him. Much could be said of him besides his alertness as a physician, his ability as a surgeon, his dexterity as an obstetrician and his skillfulness as a general practitioner, but his value was really set by the great number of grateful patients who proudly claimed him as their family physician.

E. N. GIGUERE, M.D.

Announcements

Industrial Safety Course

Colby College, Waterville, will offer a course in Industrial Safety, August 26-31, 1957.

An outstanding faculty in the field of industrial safety will conduct the program. A brochure outlining the course, listing the teaching staff, and supplying other necessary information is available upon request. Fee for the course is \$75 and covers all charges, including living quarters and meals.

Sponsoring Organizations: Associated Industries of Maine, Maine Association of Insurance Agents, Maine Department of Economic Development, Maine Department of Labor and Industry, Maine Federated Labor Council, AFL-CIO, Maine Medical Association, Maine Members, American Pulp and Paper Association, Maine State Chamber of Commerce, New England Shoe and Leather Association.

American-Korean Foundation

The American-Korean Foundation and the United States Army Medical Service have announced the discontinuation of their joint project of shipping medical books contributed by individual physicians, medical schools, hospitals and state and local medical societies to Korea.

Books should *not* be sent to the Sharpe General Depot in California as in the past for facilities no longer exist for packing and transshipping to Korea.

In making the announcement, Howard A. Rusk, M.D., President, American-Korean Foundation said, "The response of physicians and medical groups throughout the country for our appeal for books for Korean medical schools has been so generous that further contributions are not needed." As

a result of this program, Dr. Rusk stated, over 77 tons, valued at \$76,000, of medical texts, references and periodicals have been shipped to Korea for distribution to Korean medical schools.

American Congress of Physical Medicine and Rehabilitation

The Editorial Board of the ARCHIVES OF PHYSICAL MEDICINE AND REHABILITATION has established a special subscription rate of \$5.00 per year to be granted to bonafide residents in physical medicine and other specialties in the United States, its territorial possessions, Mexico, Canada, United Kingdom and Europe. The following rules apply:

1. The subscription may be entered for a period not to exceed three years.
2. All orders for this special rate must be accompanied by a letter of verification from the director of the training program confirming the resident's status and the number of years remaining in the resident's training program.
3. This special rate is not applicable if less than one year of training remains to be completed in the applicant's residency program.
4. The subscription is not transferable and must be entered in the resident's name. It cannot be sent to a hospital, organization, institution, or a person other than the subscriber.

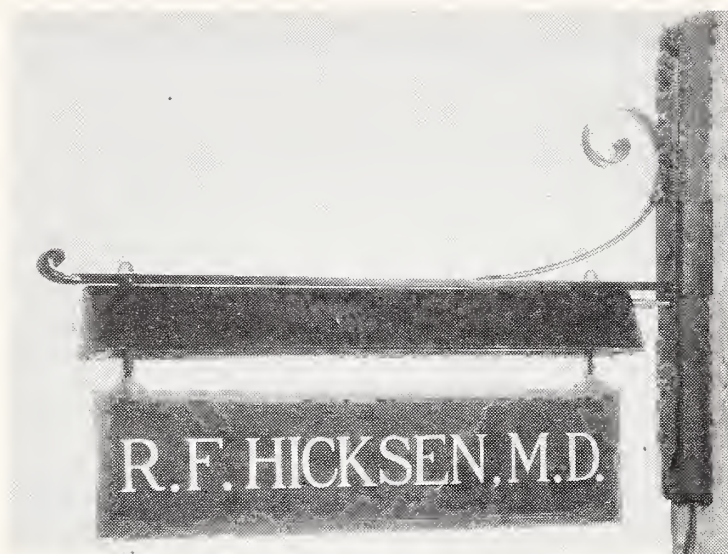
Those desiring to avail themselves of the special rate to residents should write to:

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Tuberculosis Abstract

Tuberculosis of the breast occurred in 0.1 per cent of mammary lesions at the New York Hospital. Infection occurs via lymphatic spread from the axillary nodes or from contiguous structures. It is most frequently nodular in type. A painless lump occurring in any portion of the breast is the most common symptom. Abscess, pain, fistula formation, and retraction of the nipple come later. Diagnosis is aided by x-ray and complete bacteriologic examination of the breast and material from it. Treatment should consist of anti-tuberculosis drugs and local excision of all tuberculous tissue including the axillary nodes, if present.

Reference: *Tuberculosis of the Breast*,
by George Schaefer; *American Review
of Tuberculosis and Pulmonary Diseases*,
Volume 72, Page 810, December, 1955.



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REPORT OF DELEGATE TO A.M.A.

Continued from page 248

4. Television and radio advertising for patent medicine is to be restricted.
5. Use of amphetamine in amateur sports is to be investigated.
6. A study is being made to specifically qualify disability for compensation purposes.
7. Ancillary services are to be paid by Medicare according to each state's existing procedures.
8. Type of Medicare contract to be left to each state.
9. Support Jenkins-Keogh Bill instead of Social Security.
10. Tax relief for handicapped — referred to committee.
11. To unify all rehabilitation programs under medical leadership at state and national level.
12. To assist small societies in collecting their dues.
13. Dispensing drugs is permitted if in the best interests of the patient.

PHILIP P. THOMPSON, JR., M.D.

Annual Reports to be continued in the August issue of The Journal.

STRUMA LYMPHOMATOSA

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- Lewis, L. A. and Brown, H.: Primary Thyroid Failure with Compensatory Thyroid Enlargement. *J. Clin. Endocrinol. and Metab.* 16:35-54, (Jan.) 1956.
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CORRECTION

"A New Amniotome" by William M. Shubert, M.D., Bangor, Maine, published in the June issue of the Journal was reprinted from the *American Journal of Obstetrics and Gynecology*, St. Louis, Vol. 72, No. 6, Pages 1367-1368, December, 1956 (Printed in the U.S.A.) Credit line omitted in June.

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The Journal of the Maine Medical Association

Volume Forty-Eight

Brunswick, Maine, August, 1957

Number 8

Convulsive Seizures*

GEORGE L. MALTBY, M.D.**

A brief review of the problem of convulsive seizures must, of necessity, touch only a few of the high spots. The whole problem of convulsions, fits, or epilepsy has many facets, but is a subject that should be of interest to every doctor, no matter what his specialty.

Clinical disturbances, including epilepsy, which are associated with convulsive seizures, fits or spells of various types, constitute a group of the most frequent and challenging disorders encountered in the practice of medicine. Many physicians in the past, and even today, consider a convulsion, especially in childhood, an innocuous incident. Hippocrates however, wisely affirmed — more than twenty centuries ago — that a generalized¹ convulsion is always to be regarded as a serious omen until thorough examination of the affected person and the passage of time have proved it to be but an incidental symptom of some transient or curable disease. It is important to keep in mind, when considering the diagnosis of convulsion, that seizures are no

more than manifestations of underlying disturbances, which may be varied, and may be anatomical or pathophysiological. The arrival at an accurate diagnosis depends upon the correct interpretation of many factors gathered from the patient's history, his examination, and the results of many and varied laboratory procedures.

The incidence of epilepsy in the general population is accepted as about five cases per 1,000 population or (0.5%). However, the incidence of at least a single convulsive episode during childhood or young adulthood is much higher. It must be remembered that over 90 per cent of convulsive disorders have their onset during the early years of life. Bridge² found that in a three year period, one out of every 15 children admitted to Johns Hopkins Hospital or seen in the Children's Medical Clinic, had experienced at least one convulsive seizure at one time or another. Similarly, Thom,³ in studying a group of 3,461 children, the offspring of 914 families, who were under the care of the Community Health Association of Boston, found that one child in 14, (about 7.1%) had had one or more convulsions.

The problem of classification of convulsive seizures is always difficult and one in which many epileptologists differ. However, there are several basic subdivisions that are almost universally accepted — first, the overall

*Read at the Annual Alumni Day, Maine Medical Center, June 13, 1957.

**Neurosurgical, Neurological Services and the Electroencephalographic Laboratory, Maine Medical Center, Portland, Maine.

breakdown into primary (cryptogenic or idiopathic), and secondary (symptomatic). The former is defined as a clinical condition characterized by recurrent attacks of loss of consciousness, with or without generalized convulsions, occurring in individuals who show no physical signs of organic disease in the nervous system due to congenital abnormalities, acute or chronic infections, tumors, or trauma. The very clumsiness of the above definition makes it easy to realize that the separation of primary and secondary epilepsy is not always easy; and that in many cases, there probably will be much overlapping.

Further and more detailed classification of the problem of convulsive disorders is an attempt to separate the various types of seizures on the basis of their clinical and electrical (electroencephalographic) manifestations. Thus, we have the classical grand mal episode, with its cry, tonic and clonic manifestations, its past convulsive stupor or furor, and usually accompanied by cyanosis, frothing, tongue biting and incontinence. The petit mal or minor spell consists of a very brief absence with eye blinking, and usually nothing more. Thirdly, of the three major classifications, we have the psychomotor or temporal lobe epilepsy, about which so much is being written at present. The psychomotor attack usually consists of loss of contact with ones surroundings, during which time almost any type of purposeful activity or movement may be carried out — varying from lip smacking and clothes buttoning to actual unremembered acts of violence. Finally, there is a large group of miscellaneous convulsive equivalents and variants varying from Jacksonian seizures (localized march or progress of the attack) to more rare types such as akinetic epilepsy; the sudden dropping into unconsciousness; the massive jerks of infancy; vertiginous epilepsy; musicogenic, photogenic and many other clinical variants. Most of these various clinical patterns also have fairly typical electrical characteristics when studied by electroencephalography.

There are certain very definite routines that are indicated in studying the patient with convulsions to determine the type and cause, and to decide on the best method of treatment. Fever, worms, constipation, fright, and minor head injuries are not causes of epilepsy; although, very occasionally, one of these may be a precipitating factor. A careful history and neurological examination is important. Of special importance are evidences of birth trauma, cyanosis, severe jaundice, or episodes of unexplained high fever in infancy. The family history of a convulsive disorder is of great value for there is absolutely no doubt that an hereditary predisposition to seizures is very important, not only in primary but even in secondary epilepsy. Some feel, perhaps, the single most important factor. However, Lennox¹ has said, "epilepsy per se is not inherited, but a predisposition may be." "Agenetic influence in epilepsy is not in question, but only the degree of that influence."

The neurological examination in each patient with convulsive seizures must be careful and complete in order that any evidence of localized brain damage may be found or ruled out. Routine laboratory studies are important in ruling out systemic causes for convulsive disorders, but more important, are certain more or less specialized tests. Of these, the lumbar puncture with pressure evaluation, chemical and cellular evaluation may be very important in deciding about possible causes for a secondary epilepsy. Plain x-rays of the skull are often helpful and should be included in the work-up of an epileptic patient. They may reveal pineal shift, intracranial calcification or evidence of recent or old severe traumas. It is felt that only very occasionally will the above studies indicate that air encephalography may be of importance in the routine work-up of the epileptic patient. However, perhaps the most important single adjunct to diagnosing, studying and treating the patient with epilepsy is the use of electroencephalography.

Thorough study of the patient with convulsive seizures is, to say the least, inadequate without careful electroencephalography. This may at times even require various ancillary methods such as photic-driving, sleep tracings, and metrazol activation. The electroencephalogram or EEG is important in diagnosis. Does the patient have true epilepsy or an hysterical equivalent? In classifying types of epilepsy, the EEG may be invaluable, and with classification, the decision as to the type of medication to be used can be decided upon. The medication for true or classical petit mal may be actually contraindicated in certain types of petit mal variants or mild psychomotor seizures. Furthermore, the EEG is of value in following the course of the disease, evaluating treatment, and often aids in giving a more accurate prognosis to the patient and the family.

Now, we might briefly consider treatment. Any portion of this subject, that is treatment, diagnosis, laboratory studies or prognosis could encompass the whole paper. Thus, as previously stated, we are trying to merely touch the high points. The greatest advances in treatment have been relatively recent.

The ideal objective in the treatment of epilepsy is complete control of seizures and provision for normal physical, mental, and social development. The degree of success depends on such factors as the type of epilepsy, the length of the illness, the presence and degree of cerebral damage; and finally, the amount of cooperation the physician obtains from the patient, and his or her family, friends, teachers, and employers. In certain cases, complete control is impossible, and all that can be obtained is a decrease in frequency of the seizures, so that the general well-being of the patient is not interfered with.

Therapy of epilepsy is fourfold — prophylactic, medical, social, and surgical. Before we discuss the slightly more theoretical problems of treatment, it might be wise to merely mention a few practical facts about the treatment of the individual convulsion. This consists

of first, the prevention of injuries or fatalities; and second, termination of the seizure as quickly as possible. The patient should be placed on a soft place; tight clothing should be loosened; a soft object should be placed between the teeth; and the patient should not be placed or permitted to lie on his abdomen. The airway should be kept clear, and one should be alert to prevent aspiration of mucus or vomitus. Anticonvulsant therapy should be administered as soon as feasible. Morphine, Demerol,[®] and Opium derivatives should never be used. Drugs of value in controlling severe or repeated seizures are Sodium Phenobarbital, Seconal,[®] Chloral Hydrate, Paraldehyde, Avertin[®] and Vinyl Ether, listed more or less in order of their trial in controlling a patient in status epilepticus. The prophylactic problem is obvious in that it consists of the prevention of those conditions that are known to be important factors in the causation of recurrent convulsions — head injuries in general, birth injuries, lead poisoning, whooping cough, meningitis, and the early recognition of expanding intracranial lesions.

Medical or drug therapy of epilepsy is almost daily becoming more successful and more important. Moreover, as each new drug appears, treatment is becoming more complicated. The number of cases of primary epilepsy that cannot be adequately controlled by drug therapy are few indeed. In fact, well over two-thirds of the patients with secondary epilepsy now can be controlled by drugs, with or without added surgical treatment. Thus, it becomes important to have a thorough understanding of the indications, advantages, and disadvantages of all the anticonvulsants from the older ones, such as Phenobarbital and Dilantin,[®] to newer drugs such as Mysoline,[®] Diamox,[®] and Celontin.[®] Accurate clinical and electrical diagnosis is important in deciding on the right medication. Don't forget that combinations of drugs may, at times, be the answer. Finally, one must know the side effects and untoward reactions of all the medications. Always be alert and aware of possible dermatological, blood or systemic complications. Complete knowledge of these problems will allow one to control between 80 and 90 per cent of all epileptics. There will still be a few patients uncontrolled medically, who have clear-cut, local lesions that need surgical treatment. This 15 to 20 per cent

must be carefully studied and evaluated to assure the best possible results from surgery.

Finally, in respect to treatment, we must never forget that we must treat the whole patient; and that we are dealing with the treatment of a disease that has many complicated sociological and economic manifestations. This becomes an educational problem for the patient's family and associates. The stigma must be eliminated and every effort must be made to fit the patient into the most normal sociological routine as his or her seizure control will permit. This last facet of the treatment and rehabilitation of the epileptic may be the most difficult of all, because it implies not only the therapy of the patient but the treatment of society in general in its relation to the condition.

SUMMARY

A few of the more important points in the diagnosis, treatment and prognosis of epilepsy have been discussed. With modern, intelligent therapy, convulsive disorders or epilepsy has an excellent prognosis. Well over 90 per cent of the patients can be adequately controlled so that they can lead a normal life and take a useful and respectable position in society. Epilepsy, per se, does not imply mental retardation or illness, and every effort should be made to help the patient adjust to society and as far as possible, make society accept the epileptic. An epileptic such as Lord Byron or Van Gogh is more to be desired than a non-epileptic, non-entity. Almost daily advances in the medical and surgical therapy of epilepsy are occurring, so that the prognosis of those patients with recurrent seizures is steadily improving.

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Oral Medication For Control Of Diabetes Mellitus*

RICHARD S. HAWKES, M.D.**

In 1942 a French investigator named Janbon published a paper in which he noted that patients treated with a certain sulfanilamide developed hypoglycemia. This phenomenon was studied by another Frenchman named Loubatieres from 1942 to 1946 and an account of the work was published in the *Presse Medicale* in 1955.

Interest in the use of sulfonamides in the treatment of diabetes began with a study in Germany by Frankel and Fuchs and reported in October, 1955. One of them took Carbutamide and noted fatigue, perspiration, hunger, trembling, and a certain degree of euphoria. Blood sugar determinations were made and a definite hypoglycemic effect was established. Some two hours after a dose of 2.0 grams the blood sugar level fell from 70 to near 40 mg%. Maximal blood sugar lowering effect was present in two to three hours and the blood sugar returned to normal after about six hours. They then treated over 50 patients with diabetes some of whom had never had insulin, and some of whom had been regulated with diet and insulin. A favorable influence was noted in 80% of the diabetics so treated. They observed no untoward side-effect and recommended the clinical trial of carbutamide on as wide a scale as possible. This has been done in Germany and in this country and elsewhere and several thousand patients have now been treated with Carbutamide, more recently with Tolbutamide, better known by the name of Orinase.[®] Research in this country began in November, 1955.

How do these compounds work? The answer is not yet clear. The theories of action so far proposed have been evaluated by DeWitt Stetten, Jr., in an editorial in the May, 1957 *Annals of Internal Medicine* who is quoted in part as follows:

"Theory: The sulfonylurea drugs increase the effective peripheral concentration of insulin by antagonizing insulinase, by stimulating the B-cells of the islets of Langerhans, or by some other mechanism.

"Inconsistent Findings: Whereas insulin injection is known to result in an increase of arteriovenous difference in glucose concentration, in most reports the administration of sulfonylurea does not do this. The sulfonylurea drugs produce a marked increase in the

quantity of liver glycogen under conditions when insulin administration is followed by a decline in liver glycogen.

"Theory: The sulfonylurea drugs increase the peripheral utilization of glucose in some fashion independent of insulin action.

"Inconsistent Findings: With very few exceptions it has been reported that functional B-cells are sine qua non for hypoglycemic response in patients or animals treated with sulfonylurea drugs.

"Theory: The sulfonylurea drugs, by one or another alteration of hepatic enzyme architecture, interfere with the production or the release of glucose by the liver.

"Inconsistent Findings: The finding that Tolbutamide exerts its hypoglycemic effect in the totally hepatectomized animal would certainly indicate that the liver is not the sole site of action of this drug.

"Theory: The sulfonylurea drugs damage the A-cells of the islets of Langerhans or otherwise interfere with glucagon production or they abolish the responsiveness of the liver to glucagon.

"Inconsistent Findings: In the intact patient a normal glucagon response has been found despite the administration of the drug. Since the known effects of the glucagon are apparently limited to the liver, the development of hypoglycemia after feeding of sulfonylurea drugs to liverless animals militate against the present theory.

"The mode of action, still uncertain, is apparently different in many regards from that of insulin. Until the mode of action has been clarified, it will be very difficult, in the opinion of this writer, to know with assurance whether or not we are doing the diabetic patient a favor when we lower his blood glucose concentration by the administration of a drug of the sulfonylurea group."

The program of the annual meeting of the American Diabetes Association held this month includes only one paper on the metabolic effect of sulfonamide. It does not have the answer.

Can these drugs routinely replace insulin in the treatment of diabetes? Definitely not. The majority of diabetics in the middle and older age groups whose diabetes is mild and of short duration, with insulin requirement of 40 units or less, can be maintained with near normal blood sugar values and absence of glucose excretion except under conditions of infection, major surgery, and other forms of stress. In general they are not useful in ketosis, in patients who have been in coma,

*Read at Medical Alumni Day, Maine Medical Center, Portland, Maine, June 13, 1957.

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in so-called brittle diabetes, or in juvenile diabetes, though there are exceptions. A few patients whose insulin requirement has been very high and a few brittle diabetics have been brought under better control with a combined treatment using insulin and one of these drugs.

To determine whether or not a sulfonamide is useful it is best to admit the patient to a hospital. A test dose of 3.0 gm. of Orinase is given after a fasting blood sugar. Food and insulin are withheld. A fall of 20% or more in blood sugar level in three hours indicates a good response. If ketone bodies appear in the urine in six to eight hours, the patient is not a suitable candidate for the drug.

The effective dose of Orinase is 3.0 gm. the first day and 1.0-2.0 gm. per day thereafter. It may all be given at one dose in the morning. Higher doses are undesirable because 3 to 5 gm. per day may increase the blood sugar instead of lowering it. When insulin is being replaced by Orinase the dose of insulin is reduced sharply and is entirely omitted within two or three days.

Carbutamide was withdrawn from clinical trial in October, 1956, because 5-6% of patients receiving it had toxic reactions of some sort, mostly allergic skin rashes, but vomiting, leucopenia, agranulocytosis, prolonged hypoglycemia, and jaundice were observed with a few deaths. Liver function tests affected were the BSP and alkaline phosphatase. There have been about 3% toxic reactions to Orinase. The commonest have been gastrointestinal upsets, many in conjunction with ketosis, and hence due rather to withholding insulin than to the drug itself. Skin reactions and leucopenia have also been reported.

Not enough time has yet elapsed to evaluate the effect of Orinase on the common degenerative complications of diabetes — the vascular, retinal, and renal lesions.

Other antidiabetic compounds are receiving experimental trial in various laboratories. The Lilly Company has tested literally hundreds of compounds and no doubt more will be forthcoming. Orinase (Upjohn) is the only one currently available for clinical use. It has just now been made a prescription item.

My own experience with these drugs has been too small to permit any definite conclusions but it has been interesting.

There have been six patients, as follows:

1.) A man aged 68 when put on Carbutamide in August, 1956. Duration of diabetes about 20 years. Continuous insulin 8 or 9 years, well controlled on about 10 units. Never in coma or acidosis. Diet 1500 Calories. He is on 0.5 gm. per day. All blood sugars since the shift are normal.

2.) A woman aged 77 when put on Orinase in February, 1957. Diabetes 9½ years. Poorly controlled with diet alone. Insulin for one month. Depressed while on 1000 Calorie diet and 25 units insulin. Now on Orinase — 0.5 gm. per day because of nausea thought to be due to larger dose. Last blood sugar 4 hours after a meal — 144 mg.%.

3.) Woman aged 62 when diabetes appeared in November, 1956. She was overweight. Blood sugar 260 and acetone in urine 3+ at discovery. On weight reduction urine cleared, and blood sugar normal. In March, 1957, blood sugar increased in spite of underweight. She was tested on Orinase, 3.0 gm.: F.B.S. 232 mg.%, 3 hours after Orinase 163 mg.%. Six hours after Orinase 138 mg.%. Two days later she had lost 4 pounds and blood sugar was 375 mg.%. Insulin given forthwith.

4.) Woman of 73 when Orinase was started in March, 1957. Diabetes 2½ years. Never in acidosis. Insulin 1½ yr. with good control on 8-10 units. Good care. Now on 1.0 gm. Orinase. Last blood sugar 82 mg.% 3 hours after a meal.

5.) Woman of 86 when Orinase started in April, 1957. Diabetes 15 years. Treatment by diet only until fractured hip March 12, 1957. On April 20, 1957, 12 units insulin replaced by Orinase. On 1.0 gm. per day. All urines negative. Blood sugar 112 mg.% at 11 a.m. This lady is unable to see gradations on insulin syringe.

6.) Woman of 55. Diabetic 8 years. Treated with weight reduction and diet with fair success until May, 1957. Admission blood sugar 311 mg.% at 3:00 p.m.

Next a.m. fasting blood sugar 273 mg.%, 3 hours after Orinase — 142 mg.%, and 6 hours after Orinase 114 mg.%. On 1800 Calorie diet. Now in hospital for surgery, and insulin is required. Presumably she will do as well on Orinase after the present stress situation as she did before.

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Criteria For Management And Surgical Intervention In The Control Of Upper GI Bleeding

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The time of rugged bipartisanship regarding the management of major bleeding from the upper gastrointestinal tract is well passed. With improvements in anesthesia, maintenance of blood volume, surgical technique and with the aid of logically applied clinical criteria supported by significant laboratory studies, a small but selected group of patients will come through surgical intervention for the arrest of bleeding with less morbidity and mortality than under a regime of conservative medical management.

For some years at the Maine Medical Center upper gastro-intestinal bleeding has been recognized as a co-operative problem of medical-surgical management. With the philosophy that every case in this group is a potential surgical problem all are seen on admission for evaluation and are followed by both the medical man and the surgeon.

It is the purpose then of this discussion to outline certain routines of management that have crystalized out of fifteen years of consecutive experience with thirty-one patients who presented clinical indications for and were subjected to surgical intervention for the control of upper GI bleeding. The age spread in this group was from forty-one to eighty-eight, 86 per cent being above the age of sixty and 20 per cent above the age of seventy. There were 26 males, 17 representing duodenal ulcer, 5 representing gastric ulcer, 1 jejunal ulcer and 3 gastritis. Of the 5 females, one each carried the diagnosis of duodenal ulcer, gastric ulcer and jejunal ulcer and two presented the problem of bleeding gastritis — a combined group then of 18 duodenal ulcers, 6 gastric ulcers, 5 gastritis and 2 jejunal ulcers. A significant history of ulcer disease was present in 100 per cent of the cases of duodenal ulcer, — in six instances including previous hemorrhage, and in two instances perforation. Suggestive ulcer symptoms were elicited in four of the six cases of gastric ulcer, in both of the two cases of jejunal ulcer, including prior bleeding in one instance, and in two of the five cases of gastritis. Reliable information as to previous gastro-intestinal x-ray studies was available in twelve of the

eighteen cases of duodenal ulcer, two of the cases of gastric ulcer and in one of the instances of gastritis. In the last three years emergency x-ray studies were carried out in the presence of bleeding in nine instances. Three bleeding gastric ulcers showed positive findings. X-rays on three duodenal ulcers showed one negative, one positive and one questionable report. In the two cases of jejunal ulcer the findings were negative and in the five cases of gastritis nothing was demonstrated on emergency x-ray. On the basis of brisk bleeding at the time all of the ulcer patients were subjected to gastric resection with satisfactory control of hemorrhage, save for one case of duodenal ulcer where persistent bleeding post-operatively and re-interpretation of previous x-ray studies led to re-exploration with local excision of a bleeding leiomyoma high in the fundus of the stomach. One other duodenal ulcer case required re-resection for a large acute gastric ulcer just above the suture line, with a subsequent satisfactory recovery. The operation on one of the two cases of jejunal ulcer included the interesting finding of an antral remnant from a prior exclusion which was removed along with re-resection.

The five cases of bleeding gastritis deserve special mention. In the first two, after confirming the diagnosis by wide gastrotomy, an approximate $\frac{3}{4}$ th resection was done which was followed in both instances within a period of two weeks by persistent and repeated bleeding. Secondary operation was then carried out with complete devascularization of the gastric remnant and subsequent recovery. On the basis of this experience the other three cases of gastritis treated subsequently were subjected to $\frac{4}{5}$ th gastric resection and devascularization of the gastric remnant except for the highest vasa brevia, as a primary operative procedure. Thus recovery was not complicated by any further major blood loss. Except for four patients mentioned above who required repeat gastric surgery and two elderly male patients who developed evisceration in association with the post-operative pneumonia, the post-operative convalescence in this group compared favorably with a group of elective gastric resections. There were two post-operative deaths, neither being directly related to hemorrhage, both confirmed at autopsy. The first was the youngest and first patient in the group who died twenty days postresection

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for duodenal ulcer, of pancreatitis and secondary B. Welsh's blood stream infection. The second, a seventy-one year old male operated upon for bleeding jejunal ulcer, who because of post-operative bronchitis superimposed on chronic emphysema was treated with Dicrysticin, developed sudden collapse and death on the seventh post-operative day, confirmed at autopsy to be due to a B. proteus septicemia.

On admission to the hospital, in the primary evaluation of the patient presenting clinical evidences of active bleeding, blood is drawn for typing, cross matching and initial laboratory studies through a large needle which is left in place and either kept open with an intravenous or utilized with administration of a plasma expander if necessary. In the presence of obvious shock and air hunger, Trendelenburg position with the administration of oxygen is immediately utilized. Faced with the urgent need to treat acute blood loss the relative importance of obtaining adequate and detailed history may be temporarily overlooked. To avoid this it can be very helpful to keep relatives or responsible friends available. History is directed at ascertaining the facts regarding not only the initial symptom complex of more or less syncope, tarry stools and possibly hematemesis but also the presence or absence of creditable story consistent with peptic ulcer disease including duration of such symptoms, previous episodes of hemorrhage, previous gastric surgery and definitely documented previous gastro-intestinal x-ray studies. In every instance specific inquiry is made to eliminate any type of blood dyscrasia, congenital, acquired or toxic, not forgetting Aspirin and Dicumeral®. The possibility of familial telangiectasis should not be omitted. Data on the use of alcohol, hepatotoxic drugs or past episodes of hepatitis must be included.

After initial quick evaluation and institution of urgent therapy has been completed physical examination is under-taken in a careful routine fashion. Evaluation of the patient's sensorium from the point of view of excitability, suggestive of alcoholism, or depression possibly consistent with liver coma or uremia is made. Attention to the eyes and skin is specific for jaundice, petechiae, liver spots and to the mucous membranes for possible familial telangiectasia. Abdominal examination contributes information regarding superficial venous patterns, hepatosplenomegaly, ascites or localized tenderness consistent with ulceration of the GI tract. It is our impression that careful palpation is not in any way contraindicated in the bleeding patient after supportive measures are underway.

Importance of laboratory work beyond the preparation for transfusion in the evaluation of these patients is such that it is considered on an emergency basis. Evaluation of degree of anemia and provision for blood replacement is made by the taking of the Hgb, hematocrit and total red blood count, typing and cross-matching. The examination of the white count, stained smear, bleeding and clotting times, clot retraction aid in

the detection of blood dyscrasias. Immediate prothrombin concentration, Thymol turbidity, total protein, A-G ratio provides screening for liver disease and varices which is further supported by Bromsulfathalein liver function test carried out after circulatory balance has been restored. The blood urea nitrogen is a guide to blood in the gastro-intestinal tract and the possibility of uremia. Finally, a complete urinalysis is reported early and scrutinized for evidences of chronic renal disease, diabetes, or jaundice.

CLINICAL MANAGEMENT

In view of the probable need of major blood replacement and the possibility of forced surgical intervention in these cases the consultative support of an internist in evaluating and treating the patient's total basic medical status is invaluable. Significant cardio-vascular renal disease or diabetes diagnosed early and treated intensively need not be incompatible with a successful outcome. Of the three most elderly patients in our group, one 88 with mild diabetes and arteriosclerotic heart disease withstood resection for bleeding gastric ulcer with an essentially uneventful convalescence. Another, aged 80, admitted to the hospital in severe decompensation following virus pneumonia was resected for bleeding duodenal ulcer and discharged on the 14th post-operative day. The third, a male, with chronic renal disease and a blood urea nitrogen of 110 at the time of operation made an uneventful recovery from surgery and was discharged on the 12th post-operative day. In these three cases it was the combined opinion of the surgeon and medical man that early intervention was much safer than the risks associated with longstanding parenteral therapy, blood replacement and relative starvation.

The major aim of management is restoration of normal blood volume as early as possible and the maintenance of a hematocrit of 36 to 40. It is better to transfuse the patient with a good initial hematocrit empirically in the presence of active bleeding than to be caught after dilution has given the true picture of severe anemia 6 hours later. Reliance on vital signs or repeated tarry stools alone is dangerous. In our experience certain patients fail to react with changes in pulse and blood pressure to moderately severe degree of hypovolemia until they are in a critical state. Furthermore, other patients under adequate sedation will not have tarry stools in spite of bleeding: Massive amounts of blood can pool in the colon. The only safe guide to continued need of blood replacement is a hematocrit determination at six hour intervals or more frequently if at all indicated. During this period the patients will be greatly benefited by barbiturates or Sparine® sedatives adequate to allay anxiety and produce rest. This is usually given by the clock.

EMERGENCY X-RAY STUDIES OF THE GI TRACT

It is now our custom if and when the bleeding patient's circulatory status is sufficiently stabilized to do

emergency upper gastro-intestinal x-ray studies. This is always preceded by careful briefing of the radiologist regarding the urgency of the problem so that a careful examination is carried out with a minimum of time lost between the point at which the patient leaves his own bed and returns to it. It is our impression that varices can be ruled out in approximately 80 per cent of cases examined under these circumstances, and that suggestive findings relative to ulcer or gastritis are often extremely helpful. The possibility of demonstrating a definite ulcer lesion by this maneuver seems to completely out-weigh any minimal risks to the patient involved.

SUCTION — STARVATION VERSUS FEEDINGS

After an initial observation period of three or four hours during which the patient receives nothing by mouth and is well sedated, in the absence of nausea or vomiting, frequent bland feedings in small amounts are given in the belief that they are the most satisfactory way of neutralizing acidity. Conversely persistent nausea and/or vomiting are controlled by the passing of a Levine tube and placing the patient on constant Wangenstein suction. Where bleeding is occurring proximal to the pylorus a Levine tube passed for this reason may also be of considerable value in giving external evidence of re-exacerbation of bleeding. It has, however, been repeatedly demonstrated to us that in the instances of massive bleeding into the stomach itself the stomach will regularly fill with large masses of blood clot in spite of the use of the Levine tube.

INDICATIONS FOR EMERGENCY INTERVENTION

A good rule of thumb is for the surgeon and internist to set themselves a 48 hour time limit for spontaneous cessation or intervention for surgical control of major bleeding. To generalize, the patient over fifty is more likely to persist in major bleeding because of lessened potential of small artery retraction on the basis of arteriosclerosis; further more, the patient with chronic longstanding ulcer at any age is likely to bleed dangerously by virtue of fixation of his eroded vessel in dense scar tissue. Finally, the patient with known chronic gastric ulcer is generally recognized to carry a greater risk of death from hemorrhage, but on the other hand a considerably less hazardous technical surgical problem.

A small group of cases will persist in bleeding sufficiently briskly to force the surgeons hand to surgical intervention under 48 hours. If 500 cc of blood at six hour intervals will not control the situation after initial blood replacement the surgical indication is in our opinion clear-cut. Occasionally an urgent decision may be forced by limited availability of one of the rarer blood groups in a RH negative patient. Such was the case in one of eleven patients who required surgery under 48 hours of onset. The 48-hour rule of thumb for surgical intervention because of persistent bleeding applied in thirteen of our cases. Recurrence of bleeding in hospitalized patients whose previous episodes have been control-

led by conservative medical management has been considered by us a positive indication for immediate blood replacement and surgical intervention.

There is a small group of patients who will continue with moderate bleeding that does not interfere with the dietary regime. It is controlled by transfusions every day or so, but presents a problem in persistence with risk of exacerbation. These, we feel, if young, can be nursed along within reasonable limits. If elderly, with prior bleeding or present evidences of significant cardiovascular or renal impairment, they should be considered for early surgical intervention, in the belief that the patient of advanced years with systemic disease often better tolerates a short period of surgical stress than prolonged depletion and immobilization.

Finally, the patient on medical management in the hospital who has an onset of bleeding from a known peptic ulcer should be recognized as a medical failure. If an alert house staff has spotted this event early there is everything to gain and nothing to lose by immediate surgery.

THE TECHNICAL SURGICAL PROBLEM

The basic minimum requirements for surgical attack are: 1. Adequate blood in unlimited amount in immediate availability with a pre-established means of getting it into the patient: one or more large needles or canulas in place. 2. The patient's stomach rendered as empty as possible by the use of a large calibre Levine tube and careful irrigation of the stomach. 3. Skillful anesthesia providing constantly controlled full oxygenation of the patient preferably through an indwelling intra-tracheal tube with adequate relaxation whenever needed during the procedure. 4. An operative team familiar with the technical problem. Frequently surgery must be undertaken with the philosophy of simultaneous resuscitation and control of hemorrhage administering sufficient blood by constant transfusion to attain the objective of finishing the operative procedure with the patient in normal blood volume and stable circulatory status.

Some variation in the surgical incision, depending on the problem anticipated, is certainly within reason. In the presence of known duodenal ulcer we prefer a right oblique subcostal incision which is carried across to the left costal margin. When in doubt of the lesion responsible for upper GI bleeding one finds that a midline or paramedian incision gives excellent exposure of the upper abdomen, particularly favorable to visualization of the upper portion of the stomach and the cardio-esophageal area. On opening the abdomen the initial maneuver is a rapid but careful exploration of the abdominal cavity with particular reference to evaluation of the liver and spleen, including search for and evaluation of any evidences of portal hypertension. Should the stomach be grossly distended with blood clot, a not uncommon finding, immediate evacuation of this organ through an adequate gastrotomy can be quickly done

and will considerably facilitate the remainder of the surgical procedure. On the other hand, the absence of any considerable amount of blood in the upper GI tract and the obvious presence of considerable blood in the terminal ileum or colon should not be a matter of concern to the surgeon who remembers that, not infrequently, irritability of the small bowel is such that it will empty itself of liquid blood with extreme rapidity. Where there is evident visible and palpable localized pathology or pre-operative, adequately demonstrable evidence of pathology by gastro-intestinal x-ray examination, a systematic gastric resection should be undertaken without undue loss of time directing the initial attack on devascularization and mobilization of the region of pathology. Prior to closure of the gastric stump, however, and before completing the gastro-jejunal anastomosis the fundal remnant should be carefully visualized by gentle retraction and adequate lighting, in order to be certain that no pathological lesion has been left behind. If on careful exploration there is no visible or palpable evidence of localized disease a wide gastrotomy, begun just proximal to the pylorus and carried upward on the anterior wall of the stomach to the junction of the upper and middle thirds, will provide with gentle retraction and adequate lighting complete visualization of the whole interior of the stomach. After adequate exploration of the first portion of the duodenum which can be invaginated through the pylorus with the finger and palpated trans-pylorically, the resection can then be planned so as to remove all indicated areas related to the immediate problem. It is our feeling, however, that in all instances where after this maneuver no specific pathology is demonstrated an empiric gastric resection should be carried out. In almost every instance adequate pathological explanation for the GI bleeding will be demonstrated in the specimen. In a few instances where the operator may be faced, after adequate exploration and visualization by gastrotomy, with the obvious condition of bleeding

gastritis it is our considered opinion, on the basis of personal experience, that nothing short of a 4/5th gastric resection plus extensive devascularization of the gastric remnant will adequately deal with the situation.

In chronic posterior wall or penetrating duodenal ulcer the very nature of the problem of hemorrhage obviously requires careful and rather extensive dissection of the area to control the bleeding. In instances where the adequacy of the duodenal cuff for closure is in doubt, utilization of Welch's technique of a catheter tied into the duodenum with multiple purse strings instead of a formal closure should always be kept in mind. Finally, the surgeon if at all concerned about the adequacy of his duodenal closure should not have any hesitation about placing a drain to the region of the duodenal stump.

SUMMARY

Surgical intervention for control of upper GI hemorrhage in thirty-one consecutive patients over a period of fifteen years has been accompanied by a mortality of 6.5 per cent.

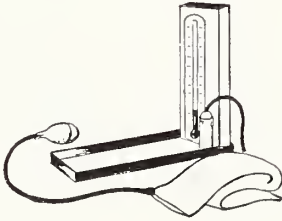
These patients present a problem for combined medical surgical study and total treatment; that they are all potential surgical problems requires effective blood volume replacement and constant maintenance of circulatory stability.

Because of very massive or persistent brisk bleeding certain cases must be recognized as a surgical responsibility and subjected to surgery as a lifesaving measure.

Hospitalized patients with known ulcer disease under medical treatment who develop initial or recurrent upper GI bleeding should be resected without delay.

Bleeding gastritis is a special problem of surgical management.

The management of the upper GI bleeding requires:
1. Unlimited and immediately available blood. 2. Skilled anesthesia. 3. An experienced operative team.
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Thorazine In Surgery Under Local Anesthesia

M. VAN LONKHUYZEN, M.D.*

A completely relaxed, calm and cooperative patient would indeed be ideal for surgery under local anesthesia. This paper has been written to present some findings concerning the use of Thorazine[®] as a routine preoperative medication for such patients.

Ever since its introduction in Europe and America Thorazine has been widely investigated and used as a tranquilizing drug in neuropsychiatric disorders and other conditions. Its antiemetic effect also has found wide usage and by now has been well established. It was only natural that this drug should quickly seek a place in the armamentarium of the ophthalmic surgeon, since it gave promise of leading his patients to the perfect state of mind and cooperation so necessary in his surgery. The plan of investigation under consideration here was to study the efficacy of Thorazine given as a routine peroperative medication along with the customary preoperative medication with special emphasis on: 1) its tranquilizing influence on the patient during eye surgery under local anesthesia and 2) its antiemetic effect on such patients during their postoperative recovery period.

METHODS

The evaluation of the mental status and cooperation of a patient during surgery under local anesthesia is subjective and could well be influenced by the surgeon's knowledge of the patient's premedication. To make the study as objective as possible the administration of Thorazine was left in the hands of a physician who was not present during the surgery. No information was available to the surgeon to indicate whether a patient had or had not received Thorazine medication. Fifty patients were studied.² Half of the patients received Thorazine and half did not. These were selected in a completely random sequence. The evaluation of the patients' behavior during and after surgery was done by only two surgeons, one being present at each operation. The operations were largely lens extractions with only a few patients undergoing a different procedure (such as dacryocystorhinostomy, needling, lid repair and iridectomy). The control group (those not receiving any Thorazine) received the following premedication one hour prior to surgery: Demerol 75-100 mgm. (depending on weight of patient) and chloral hydrate 0.5-1 Gm. The Thorazine group received Thorazine 50 mgm. p. o. together with the preoperative medication which had

been cut to about one-half of the usual dosage, (i.e. Demerol 25-50 mgm. and chloral hydrate 0.5 Gm.) all given one hour before surgery. A few patients also received an additional 50 mgm. of Thorazine p. o. 4 to 6 hours after surgery.

Since the behavior of the patient on the operating table could be expected to be influenced by his personality, the personality of the patients was evaluated by placing each patient in one of the following four categories: a) had been disoriented at times; b) had senile tendencies; c) apprehensive and d) apparently calm. The patients were carefully questioned about and observed for any postoperative nausea and vomiting up to and including the morning following surgery. In order to reach objective conclusions about their behavior and cooperation during the surgery, each patient was evaluated on the basis of six different categories as shown in Table II. Their "orientation" was evaluated by the patient's response to questions such as the time of day, place, date, birthdate, etc. The patient's "lack of apprehension" was evaluated on the basis of his answers to such questions as, was he worried, or afraid, or did he feel comfortable, etc. Here a score of "excellent" means no apprehension was apparent and a score of "poor" means that the patient was very markedly apprehensive. In "tolerance to painful stimuli," such as injection of the local anesthetic, "excellent" again means that no reaction was present while "poor" means that the patient reacted very markedly to such stimuli. "Alertness" was graded as follows: Excellent (very alert), Good (alert), Fair (drowsy) and Poor (sleeping). The sixth category is the surgeon's general estimate of the patient's total behavior and cooperation during the entire procedure.

RESULTS

Table I shows the distribution of the patients according to their personality as evaluated preoperatively by the surgeon who did not know whether the patient belonged to the Thorazine or the control group. As can be seen the distributions are almost identical for the two groups.

(1) The Thorazine (trademark for S. K. F's brand of chlorpromazine hydrochloride) used in this study was furnished through the courtesy of Smith, Kline and French Laboratories, Philadelphia, Pa.

(2) The patients were obtained from the private and ward admissions to the Section of Ophthalmology, Grace-New Haven Community Hospital, New Haven, Connecticut.

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TABLE I
PREOPERATIVE EVALUATION OF PERSONALITY OF PATIENTS

Personality	Number of patients	
	Thorazine group	Control group
Disoriented at times	0	1
Senile tendencies	2	0
Apprehensive type	8	9
Apparently calm personality	15	15
Total	25	25

TABLE II
EVALUATION OF BEHAVIOR OF PATIENTS DURING SURGERY

Behavior	Number of patients			
	Excellent	Good	Fair	Poor
Orientation of patient	9* (6)**	16 (14)	0 (5)	0 (0)
Lack of apprehension	7 (8)	12 (13)	3 (2)	3 (2)
Response to commands	11 (7)	7 (11)†	6 (4)	1 (3)
Tolerance to painful stimuli	7 (9)	10 (9)	7 (4)	1 (3)
Alertness	1 (1)	21 (17)	3 (6)	0 (1)
Surgeon's general estimate	9 (6)	9 (15)	6 (3)	1 (1)

* Thorazine group (total 25)
** Control group (total 25)
† This number includes 1 deaf patient who could not respond to command and was given an average score.

TABLE III
POSTOPERATIVE NAUSEA AND VOMITING

Time	Number of patients			
	Reporting nausea	Who vomited		
		Occasionally	Considerably	Total
Immediately following surgery	0* (0)**	1 (2)	0 (0)	1 (2)
Evening following surgery	3 (5)	3 (5)	0 (1)	3 (6)
Night following surgery	1 (8)	1 (3)	0 (2)	1 (5)
Morning of day after operation	1 (7)	1 (1)	1 (3)	2 (4)

* Thorazine group (total 25)
** Control group (total 25)

The evaluation of the behavior and cooperation of the patients during surgery is given in Table II. The numbers for the group receiving Thorazine are shown first; the numbers for the control group are given in parentheses immediately following.

The results of the effect of Thorazine on postoperative nausea and vomiting are given in Table III.

DISCUSSION

As mentioned the personality of the patient may be

expected to influence his behavior under the heavy sedation during surgery under local anesthesia. Because of the similarity of the two groups in the classification according to personality (Table I) we do not need to consider this factor further in our results. We may expect this influence to be the same in both groups.

In regard to the behavior of the patients during surgery it can be seen from Table II that the figures for the two groups are very similar. The major difference occurs in the category of "orientation" where there

TABLE IV
AVERAGE BEHAVIOR OF EACH GROUP

Behavior	Average score	
	Thorazine group	Control group
Orientation of patient	3.36	3.04
Lack of apprehension	2.92	3.08
Response to commands	3.12	2.88
Tolerance to painful stimuli	2.92	2.96
Alertness	2.92	2.72
Surgeon's general estimate	3.04	3.04
Total average	3.04	2.95

are five evaluations of "fair" among the patients of the control group. To facilitate analysis of the results one might use the method of weighted averages. For this purpose one evaluation of Excellent is given a value or a score of 4, Good a value or score of 3, Fair 2 and Poor 1. Thus all desirable behavior from the surgical point of view is scored high 4 and all undesirable behavior scored low 1. These weighted values are then added for each category. By dividing these totals by the number of patients in each category (25) one arrives at the average score of a patient. This is done for each of the two groups. A perfect score for a category would be 4. A poor score would be 1. Table IV shows the scores for each behavioral category.

These average scores are in very close agreement. The figures for the "Surgeon's Estimate" are surprisingly enough in exact agreement. Since the surgeon when operating is not particularly interested in any one specific category but rather in the patient's overall behavior and cooperation one might calculate the average score per patient for all six categories, assuming that they are all of relatively the same importance. Thus one finds an average score per patient of 3.04 (standard derivation 0.79) for the Thorazine group and 2.95

(standard derivation 0.81) for the control group. The difference between these two scores has no statistical significance. Thus we may conclude that Thorazine used as a routine preoperative medication in the manner described above has no significant effect on the cooperation or behavior of a patient during surgery performed under local anesthesia.

In the number of patients who showed postoperative nausea and vomiting (see Table III) there is a definite difference especially during the night following surgery where the control group shows that eight patients complained of nausea and five vomited, while only one patient in the Thorazine group complained of nausea and only one vomited.

SUMMARY

The efficacy of Thorazine as a routine preoperative medication given one hour prior to surgery was studied. Thorazine has little or no effect on the patient's behavior or cooperation during surgery under local anesthesia when administered in this manner. It does, however, reduce considerably the incidence of postoperative nausea and vomiting.

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The Psychogalvanic Reflex, A Simple Test Of Sympathetic Interruption*

HOWARD P. SAWYER JR., M.D.**

The sympathetic division of the autonomic nervous system has in the past been the object of many investigations, anatomical, physiological and pharmacological. The results have been somewhat confusing to say the least.

It is not the purpose of this paper to present the anatomy of the sympathetic nervous system other than to point out in passing that some of the earlier concepts might well be revised in view of clinical observations following various types of sympathectomies and relatively recent studies involving the electrical stimulation of individual ganglia plus careful dissection correlated with histological studies. Many neuroanatomists and surgeons have now concluded that due to the multiplicity of anatomical variations in the lumbar sympathetic chain alone it is more practical to refer, not to the second lumbar sympathetic ganglion, but to the ganglion opposite the second lumbar vertebra, as in reality it might be the third or fourth ganglion in the chain. Also in contradistinction to earlier beliefs anatomical studies have demonstrated sympathetic vasomotor fibers to the lower extremity originating from the spinal cord as low as the level of cells of origin of the fifth lumbar spinal nerve. Electrical stimulation of the intact ganglia at L-1 and 2 have produced somewhat different sweating patterns in different individuals, while following sympathectomy from T-9 to L-1 inclusive for hypertension areas without sweat gland activity have been limited to a narrow band about the waist.

Frequent disparity between sudomotor, pilomotor and vasomotor responses argue against the identity of outflow of these three modalities in the same peripheral sympathetic pathways. Thus it might be advisable to observe more than one modality as an indication of the presence or absence of sympathetic activity. Cox has shown that following electrical stimulation of sympathetic ganglia the vasomotor response outlasted the stimulus, whereas the sweating ceased upon removal of the stimulus.

Many years ago it was noted that in psychiatric patients undergoing electroshock therapy the skin resistance to the passage of electrical current varied among

individuals from a few thousands ohms to three million ohms.

Over fifteen years ago Richter and Woodruff made the following important observations:

1. The resistance to a small current passing in or out of the body is localized almost entirely in the skin since a puncture therein reduced the resistance to a mere few hundred ohms.
2. Normally innervated skin showed areas of high and of low resistance, the low resistance being found in areas well endowed with sweat glands such as the palms and soles rather than the dorsal surfaces.
3. The resistance varied with sweat gland activity but not necessarily with the amount of sweat on the surface as the freely activated sweat glands of some individuals produce little or no sweat.
4. The degree of resistance usually decreased with increased sympathetic activity as in the application of external heat, emotional excitement, muscular effort or mental tension. On the contrary decreased sympathetic activity as evidenced by rest, relaxation, sleep whether natural, pathological or drug induced tended to increase the skin resistance.
5. Severing the peripheral nerve trunk distal to its junction with the gray ramus increased the skin electro resistance, while stimulating the severed end decreased the skin resistance in the area of its distribution. These changes depend on the sympathetic component of the nerve inasmuch as interruption of the sympathetic component with the motor and sensory components remaining intact again produced an increase in the skin resistance.
6. Postganglionic sympathectomies gave higher levels of resistance than preganglionic and lacked the gradual decrease in resistance met with in the latter as nerve regeneration took place.

Thus the groundwork was laid for another method of mapping out the somatic or sympathetic dermatomes by stimulation or ablation of individual spinal nerves or sympathetic ganglia and observing the alteration in sweating patterns.

A dermometer was devised by them employing an half inch silver coated zinc disc with an insulated handle as an exploring electrode. Originally, in order to reduce resistance, the stationary electrode was inserted subcutaneously in the ear lobe. Later it was found that prick-

*Presented at a meeting of the Maine Society of Anesthesiologists, April 13, 1957 at Waterville.

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ing the skin with a hypodermic needle prior to applying the electrode would suffice. When an imperceptibly small current from a $4\frac{1}{2}$ volt dry cell battery was passed through the body any change in resistance would of necessity be directly under the exploring electrode. With the potential fixed by means of a 1000 ohm potential divider the current, as measured by a microammeter, would be an inverse function of the resistance. Thus areas of high or low resistance, as demonstrated by low or high amperage, could be mapped with the exploring electrode.

Early dermatometer models were large, fragile, expensive and inaccurate for resistances over 4.5 megohms. Subsequent models were made accurate within five per cent in a range of one thousand ohms to 45 megohms, which suffices for almost any skin resistance studies.

In patients with a sympathectomy the areas of altered sweat gland activity as measured by changes in skin resistance were found to correlate very closely with areas of absent sweating as indicated by Minor's starch iodine test. There are local variations, but in essence this test consists in applying dry starch and iodine to the skin, subjecting the patient to dry heat and observing the areas of color change from brown to blue, a reaction which depends on the subsequent addition of water in this case in the form of sweat. Although useful earlier in correlating sweating patterns as measured by skin resistance changes, the starch iodine test is messy, time consuming, hard to evaluate in Negroes, requires a source of external heat and finally some individuals do not sweat appreciably in hot air.

Changes in the skin temperature of extremities have been used as a measure of the degree of sympathetic activity. Although too variable to be of use in plotting sympathetic dermatomes, skin temperatures are of some value in indicating the overall degree of sympathetic vasomotor activity in a given area. A permanent numerical record can thus be made, however its validity and accuracy depend on the constancy of the room temperature and adequate equilibration between the environment and the extremity to be tested. Constant temperature rooms, while useful for experimental work, are a bit expensive for clinical use.

In the case of the diagnostic sympathetic block for peripheral vascular disease if little or no elevation of skin temperature occurs, one may be in doubt not only as to the role of vasospasm in such a case but also as to whether or not a successful block had been achieved. An increase in the measured skin resistance would confirm the presence of a satisfactory sympathetic block regardless of its effect on the degree of vasospasm, and occurs earlier after blockade than does vasodilatation.

Fere, working in animal magnetism, described the inherent electrical activity of the skin itself in 1888. The decrease in skin resistance due to physiological activity under the control of the autonomic nervous system following physical or psychic stimuli was termed the psychogalvanic reflex or P.G.R. by Tarachanoff in

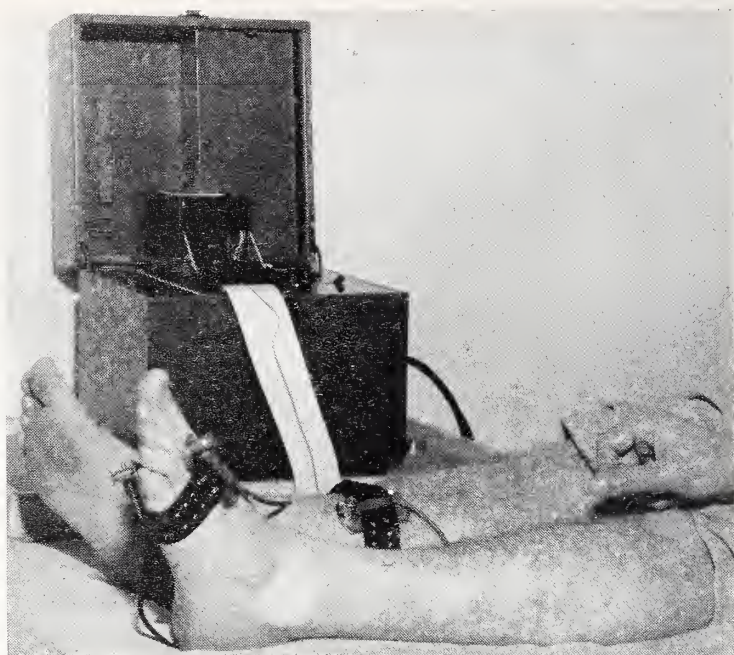


FIG. 1. Rt. and l. arm electrodes applied to dorsal and ventral aspects of extremity to be tested. Rt. Leg lead electrode neutrally grounds untested leg. Selector switch on Lead I.

1890. A transitory decrease in skin electroresistance occurs in response to unpleasant stimuli such as loud noises, bright lights, pin pricks, valsalva maneuvers or merely spontaneous emotion, provided the sympathetic pathways are intact as they constitute the sole efferent limb of the reflex. Such is the basis of the lie detector and has been termed by various workers along with the concomitant increase in the activity of the sweat gland cells the sudorific reflex, palmar galvanic reflex, galvanic skin reflex, galvanic apparent resistance, electrodermal response or as recently suggested by Lewis the sympathogalvanic reflex.

This early terminology was somewhat confusing as it often referred to any of three distinct but related phenomena namely:

1. The actual measurement of skin resistance to the passage of an electrical current
2. Measurement of the transitory change in skin resistance following a stimulus
3. Measuring the spontaneous electrical activity of the skin and sweat glands in response to a stimulus.

If one is willing to settle for an indication of the overall flow of sympathetic impulses to an extremity rather than a complete map of the sympathetic dermatomes, one may avoid the inconvenience of a constant temperature room and the expense of thermacouple or dermatometer by using an ordinary electrocardiographic machine. Such a machine is usually readily available. A direct writing model is preferable but certainly not necessary as on some photographic model electrocardiographic instruments the string galvanometer shadow is readily visible.

Bonica states that Lewis and Alexander first used the E.C.G. machine to detect changes in skin electrical activity brought about by various stimuli through the

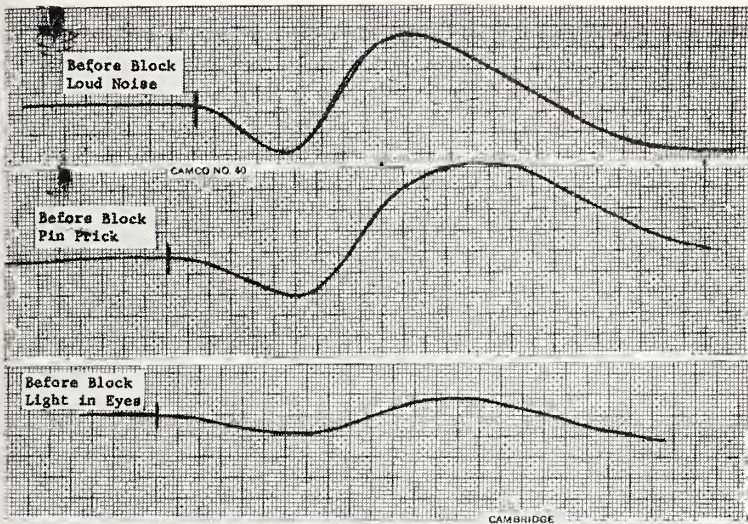


FIG. 2. Typical biphasic curves when stimulus applied prior to sympathetic blockade.

psychogalvanic reflex. Its use is based on the principle that a conductor, here a quartz string coated with silver or platinum, lying in a magnetic field will move when a current passes through it. The direction and magnitude of the string movement depend on the direction and amplitude of the current and the strength of the magnetic field. Currents to be measured in an electrocardiogram come from the heart itself while in this detection of the psychogalvanic reflex the current comes from the cells lining the sweat glands.

The relatively simple technique starts with the usual grounding and standardization of the machine so that the same degree of electrical current will always produce comparable deviations of the galvanometer string. This may be accomplished after the right and left arm leads have been snugly applied with electrode jelly to opposite surfaces of the hand or foot to be tested. The right leg lead serves only as a neutral ground and may be applied to either lower extremity not being tested. With the lead selector switch turned to lead one, the paper is put in motion and the stimulus applied. A biphasic curve following a suitable stimulus indicates changes in skin resistance and sweat gland activity which require the presence of sympathetic impulses to the limb in question. A flat curve, in the absence of any technical errors, indicates the absence of the sympathetic efferent limb of the reflex arc.

- The advantages of this simple test are as follows:
1. It is independent of the environmental temperature and no period of equilibration is required.
 2. No special equipment other than an electrocardiographic machine is needed.
 3. A permanent record is obtained.
 4. It is rapid.
 5. It definitely indicates whether sympathetic blockade has been achieved.
- The disadvantages are:
1. Sixty cycle interference, which can almost always be eliminated by proper grounding of the machine.

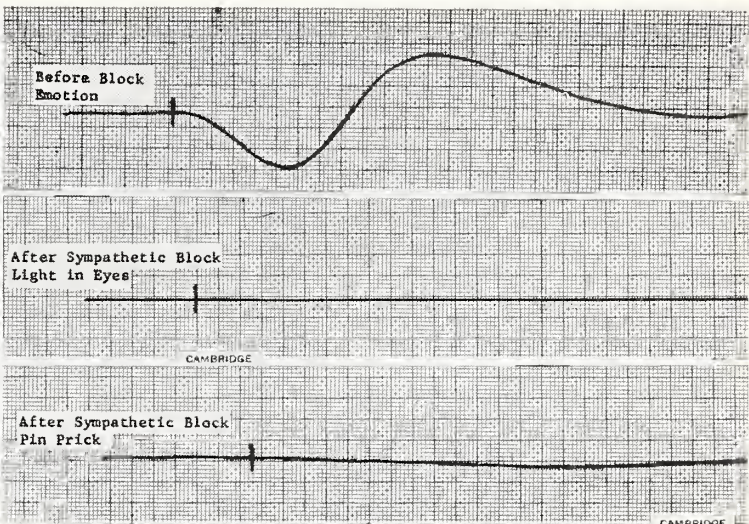


FIG. 3. Top curve-effect of emotional tension prior to block. Lower two curves show absence of reflex following sympathetic blockade.

2. Other electrical artifacts which do not invalidate the test such as those due to dried electrode paste, superimposed cardiac impulses, muscle tremors and sympathetic hyperactivity due to nervous tension.
- The test will not predict the benefit to be derived from chemical or surgical interruption of the sympathetics but only indicates whether or not such interruption has been achieved. The beneficial effects of such interruption must still be evaluated clinically on the basis of plethysmography, skin temperature changes, increased exercise tolerance or the absence of pain. Sympathetic fibers are prone to regenerate following surgical interruption.
- Such interruption may on occasion be grossly incomplete or completely lacking immediately following operation. Either situation could readily be assessed with the aid of the psychogalvanic reflex.

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Continued on page 306

On The Establishment Of A Department Of General Practice In A Large Hospital

SIDNEY R. BRANSON, M.D.*

There is a shortage of General Practitioners in the State of Maine which is especially acute in the rural areas. It occurred to the writer about a year and a half ago that one method of relieving this situation would be to make general practice more attractive to the younger physicians. With a Hospital Department of General Practice available the young physician could take care of his patients in the manner in which he was trained, and have full use of all the facilities of the hospital. This department would also benefit doctors already in the area. Being an integral member of a recognized department would bring these doctors closer to the hospital. They would have a greater role in the actual functioning of the institution and would join their colleagues in conducting clinics, serving on various committees, and thus have a sense of belonging to the hospital as opposed to the concept of the so-called courtesy staff, where a physician could take care of his patients but had no clinic, ward, or administrative responsibilities.

At the November 1955 staff meeting of the Maine Medical Center it was suggested that a Department of General Practice be organized and the Chief of Staff appointed a committee to study the project. The committee decided to poll the Chiefs of Service to determine what they could and would offer to the General Practitioners. It was found that each service was willing to provide a practical and didactic educational program to fit the needs and desires of the general practitioner.

A letter was sent to each general practitioner on the courtesy staff asking him the type of instruction, the number of hours a month he would be able to spend in the hospital, and the specialty in which he desired further instruction. Of the thirty-two questionnaires sent out, eighteen were returned stating their desire to participate in the program and to spend at least eight hours a month on department work.

At this point it was decided by the committee that a General Practice Department in the hospital was a feasible undertaking. This decision was relayed to the Chief of Staff who brought the matter to the Executive Committee and the Board of Directors of the hospital. The project was approved by this body in the summer of 1956.

The General Practitioners were then asked to convene and to suggest the names of three or four doctors

from the group who had expressed willingness to serve as Chief of their service. A Chief and Assistant Chief of the Department were then appointed by the Executive Committee and the Department got under way.

The question of role of the General Practice Department involved a great deal of discussion. One plan was to staff a general medical clinic in the out-patient department in conjunction with the medical service. Another function involved signing two of four members of the General Practice Department to separate services for a three to six month period. During this time they would make ward rounds with the visiting physician, attend specialty clinics, go to grand rounds of the service, and present one of the service cases or one of their own at grand rounds during their time on the service. A minimum number of hours per tenure and special required attendance was proposed. A third idea was a series of lectures in certain clinical and non-clinical subjects as added or alternate attractions.

At a subsequent meeting of the General Practice Staff it was decided to start the program with a general medical clinic, and early in 1957, the General Practice Clinic was established. This clinic meets Mondays and Fridays from 10:00 A.M. until 12:00 noon in the out-patient department of the Maine Medical Center. It has been functioning very well and we feel that both the doctors and the hospital have benefited by its presence. Staff members are also encouraged to work in the specialty clinics if they so desire, and to attend grand rounds on the various services. Also, the entire educational program of the house officers is available to members of the department.

Several of the standing committees of the medical staff now include general practitioners; viz, Medical Records, Scientific and Medical Library, Credentials, Educational, Public Relations, etc. It is stimulating for our family doctors to serve on these committees, and the hospital now gets the benefit of their experience and points of view. Up until now, only specialists comprised these committees. The presence of the general practitioners makes for better balance in all phases of hospital mechanics.

It might be stated that the formation and activities

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†We are indebted to Philip P. Thompson, Jr., M.D., of the Department of Internal Medicine, and Mr. Donald M. Rosenberger, Director of the Hospital, for their assistance in developing this project.

of the general practice department as outlined above, is in accord with the standards set forth by the JOINT COMMISSION ON ACCREDITATION OF HOSPITALS. The department also follows the rules, regulations, and requirements of the American Academy of General Practice. A general practice residency is plan-

ned for the near future and the hospital has made application to the Council on Medical Education and Hospitals of the American Medical Association for approval of this type of training.

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Recent Trends In Infertility Analysis And Treatment*

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Time and experience have modified our concept of normal fertility, and contrariwise, what constitutes an infertile mating. When is it indicated to proceed with infertility studies? In helping us to define fertility, Guttmacher¹ has shown that the most probable number of liveborn children to be expected by a woman who marries at age 17 and makes no attempt to thwart her normal reproductive potential is 13, as calculated from data of three ethnic groups. The most notable of these groups, the Hutterites, is a protestant sect, which emigrated from Russia and settled in South Dakota, in the 1870's. The Hutterites hold strong anti-birth-control views. They are sexually moral as a group. It is known that their population doubles every 16 years i.e. $3\frac{1}{2} \times$ the rate of the U. S. census increase. This rate of increase is attributable not only to their views on contraception, but also to the lack of economic pressure, since they have adopted a system of communal living with an equal living standard for all.

With these people, periods of gestation are normally separated by mean periods of about 15 months involuntary sterility, probably including 6 months of post partum lactation amenorrhea, three months of anovulatory cycles after resumption of menses, and 6 months required for conception after ovulation is re-established.

From data from six geographical areas, Guttmacher¹ calculated the time for a first conception to occur; the median lies between two and three months. The previous use of contraceptives does not lengthen the time for conception. The optimal coital frequency for conception was found to be four or more times weekly. The decline of coital frequency with age is only one of many factors in the strong antifertile influence of length of marriage. It is of further note that race, social background, parity exclusive of age, and intel-

lectual level, when dissociated from contraceptive practices, were found to have no effect on fertility.

From Guttmacher's article, and others, it evolves that our former concept of a barren marriage being constituted by two years involuntary sterility should be modified to one year. The unfavorable effect of the duration of a barren marriage, irrespective of the ages of the couple, on the successful outcome of infertility analysis and treatment has been well documented in at least half a dozen articles this past year each reporting on 500 or more infertility case studies. A plea is made therefore, don't procrastinate, whenever a couple seeks advice after 12 months involuntary sterility.

Davis and King state that at least 15% of marriages are barren and that at least 10% consult an M.D. Space will not permit full elaboration of the details or sequence and interrelation of various tests and procedures followed in the infertility analysis since they will vary somewhat with the individual case. Our discussion will be limited to the prerequisites for fertility and the causes of infertility among the various anatomic components as suggested by Rock²: the male, the vagina, the cervix, the fundus (including the endometrium), the tubes, the ovaries, and finally the psychogenic aspects.

Emphasis will be placed on recent trends in the analysis and treatment of these causes. Finally I would like to mention the controversial issue of artificial insemination.

At the original visit it is worthwhile to orient the patient, and if possible her husband, as to the basic scheme of investigation as well as the prerequisites for fertility as defined by Meaker:

1. Testes must produce normal sperm in sufficient numbers.
2. The male genital tract must be patent (as well as potent).
3. The prostatic and vesicular secretions must be favorable to sperm survival and nutrition.
4. The sperm must then be delivered to and received by the cervix.

*Amended from a paper presented to the Portland Medical Club Jan. 8, 1957.

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5. The endocervical secretions must be favorable to the sperm. The sperm in turn must have sufficient linear progression to penetrate the cervical mucus and ascend into the uterus.
6. The uterus must allow free passage of the sperm to the ostia of the tube.
7. The tubes must allow free passage of sperm to ova.
8. There must be free passage of ova from ovary into the tube.
9. Ovaries must produce normal ova.
10. Endometrium must permit implantation and growth of the fertilized ovum (Greenhill).

After a complete history, a physical examination and routine laboratory studies to rule out anemia, foci of infection, diabetes, syphilis, hypothyroidism and other systemic diseases, investigation should begin with the husband, since the male factors are solely or partly responsible in at least 40% of infertile couples.

CAUSES OF INFERTILITY IN THE MALE

Defective or inadequate sperm.

Hypospadias

Male impotence

Sperm agglutination.

Although the most direct and simplest test of the husband's reproductive potential is the postcoital or Sims-Huhner Test on the wife at or near ovulation, it is still important to know what constitutes a normal semen analysis. The semen should be checked after at least 48 hours abstinence depending on the usual period of continence. It should be checked as soon as possible after the initial 30 minute delay that permits liquefaction of substrate and activation and dispersal of sperm. The volume, opacity, viscosity and number of WBC should be routinely noted, although there is no consistent relation of the number of WBC in the semen to fertility. The normal values for the rest of the semen analysis vary with the individual authors. I have selected the following norms:

Motility — 60% highly active — when checked within 2 hours at room temperature.

Morphology — at least 80% normal forms.

Sperm count — at least 40 million/cc; 60 million/cc to be of unquestioned fertility.

Volume — 2 to 4 cc.

Total count — at least 125 million.

There is considerable current disagreement regarding the fertility potential of sperm counts in the range of 20 to 60 million/cc. However it is known that counts in the 20 to 40 million/cc range are associated with many more non-motile and abnormal forms than the higher counts, and this alone, may represent impaired fertility. At least two or three semen analyses should be made. MacLeod and Gold³ have carefully documented a wide variation in semen qualities in the same individual, not only in sperm count, but more especially in motility, in their study of 455 infertile patients and 129 medical students furnishing from two to 150

semen specimens over a period of one to three years.

According to MacLeod, the proportion of coital activity leading to conception increases with the frequency of intercourse in the case of the normally fertile male — that is with sperm counts of 60,000,000/cc and above. MacLeod has demonstrated motility to be the most important quality of semen with respect to ease of conception. Motility has been observed to be enhanced by frequent ejaculation. Joel and Kornhauser,⁴ in Tel Aviv, have recently demonstrated this most important factor of motility to be prolonged, and therefore the life span of spermatozoa to be lengthened, by adding a sterile saline solution containing 60,000 u. penicillin or 10 mg. Chloramphenicol® to 0.5 to 1.0 cc semen. Larger amounts of these antibiotics tended to depress motility and smaller amounts had no effect. Chloramphenicol was more effective than penicillin. Other broad spectrum antibiotics depressed sperm motility or were without effect.

MacLeod⁵ in his comprehensive current review on human semen this year, suggested again the possible beneficial effect on sperm motility (in the presence of otherwise adequate semen) of testosterone in doses much lower than those used in the more controversial testosterone suppression and rebound therapy for oligospermia.

A new technique for freezing semen⁶ in insulated containers with dry ice for three months followed by quick thawing at 37° C has yielded 67% sperm survival. This procedure is not effective for use with the less motile oligospermic specimens, which freeze poorly. However, the technique may lend itself to storage of normal semen and thus pave the way to the establishment of banks for frozen donor semen for use in artificial donor insemination.

Oligospermia is not often benefitted by pituitary or chorionic gonadotropins, testosterone rebound, thyroid extract, improved diet, rest and regular exercise, elimination of systemic disease, or by measures aimed at decreasing scrotal temperature, including excision of varicoceles. However, the use of the first portion of the split ejaculate, with the much higher sperm content, promises to increase the conception rate when homologous insemination is resorted to for oligospermia. According to Heller⁷ conception rates usually increase within three to six months after azospermia is induced with 25 mg. testosterone propionate i.m. daily. This result must be due to an unknown factor, since conception frequently occurred with no actual improvement in sperm count, per cent of, or quality of motility. In Heller's series, and others, a small percentage of permanent azospermia, or more marked oligospermia, resulted from testosterone suppression. It would therefore seem advisable not to resort to testosterone rebound until after a six months period of homologous inseminations, under optimal conditions for conception, had failed.

The treatment of apparent azospermia is hopeless unless it is due to an obstruction, most frequently an in-

flammatory obstruction of the vas deferens, in the presence of normal spermatogenesis, as proven by testicular biopsy. In this situation epididymovasostomy may effectively restore fertility.

Another recently discovered cause of infertility is sperm agglutination. Two types are described, one, agglutination by heads; the other, by tails. Causes and treatment of this condition remain to be worked out. An antiagglutinin, stimulated by estrogen, and possibly inhibited by progesterone, is known to be present in the human follicle, Fallopian tube, and cervical mucus. In May of this year, Dr. Richard Amelar, at the Margaret Sanger Research Bureau, reported a 5% incidence of sperm agglutination in specimens from infertile couples. A marked decrease in agglutination has been observed while the patient was receiving 100 mg. ascorbic acid t.i.d.

VAGINAL FACTORS

Obstruction

Inflammation

Dyspareunia

Vaginal obstruction may be due to hypoplasia occasionally, psychogenic resistance, male ineptitude or overkindliness, or vaginal septa. The treatment for these conditions seems fairly obvious.

Vaginitis, except where a certain yeast, *Krusei*, is concerned, is not a deterrent to fertility if intromission can be achieved in the presence of the irritation, since the seminal fluid will fairly well protect the sperm until they migrate into the cervical mucus. On the other hand, if cervicitis is associated with vaginitis, a definite antifertile factor exists. There is nothing especially new in the treatment of vaginitis, except to mention Tritheon,[®] Ortho's new oral trichomonacide given 100 mg. t.i.d. p.c. in 10 to 20 day courses to husband and wife in refractory cases. This drug is by no means a panacea, probably because the refractory trichomonas vaginitis may be related to hormonal, metabolic, nutritional, or cytochemical derangements in the vaginal mucosa. The possibility that the husband may very often be an asymptomatic carrier of the *Trichomonads* seems remote in view of the available evidence. Another factor coming into prominence in the etiology of vaginitis lately is the internal use of soaps containing hexachlorophene or other bactericidal agents which destroy the normal vaginal flora of *Döderleins bacilli*, making it possible for trichomonads and other pathogens to take over. In addition to the usual trichomonacidal douches, suppositories and ointments, supplemental use of thyroid extract, multiple vitamins, improved nutrition and hygiene, sexual abstinence, and occasionally, low doses of estrogens may have to be resorted to before cure is obtained.

Dyspareunia, the final vaginal cause of infertility, may be due to obstruction, inflammation, or be purely psychogenic, which is usually the case.

The patient who complains of much immediate postcoital seminal fluid leakage, is probably indulging in a

competitive type of intercourse, resulting in a more marked pelvic floor contraction, as compared to the customary passive role in intercourse, which is certainly more favorable to conception. Although sperm may be deposited directly in the cervical canal during coitus, it has been my limited observation that unless marked seminal fluid leakage can be corrected by superficial, or in some instances more intensive psychotherapy, the prognosis for fruitful coition is poor. This situation may be an indication for homologous insemination, but only if associated with a consistently poor Sims-Huhner (postcoital) test. Occasionally the use of a vaginal obturator after intercourse may be helpful in preventing leakage.

CERVICAL FACTORS

Inflammation

Defective secretion

Inaccessibility

Cervical stenosis

If the cervical mucus contains pus at the time of ovulation, the diagnosis of endocervicitis is established. Associated endometritis may have to be ruled out. The presence of many leukocytes in the cervical mucus at times other than ovulation may be physiologic. The treatment of cervicitis in infertility patients has been changing from conization of the lower half of the endocervical canal, to radial cauterization, to light superficial cauterization, and more recently to the use solely of local and systemic antibiotics in many clinics, on the supposition there is less interference with normal cervical physiology. In any event, higher conception rates have been reported when cautery was not used. There is room for debate on this point. At the Rhode Island Hospital, definite improvement in the Sims-Huhner test has been observed after orally administered broad spectrum antibiotics, although local and systemic antibiotics have no real value in treatment of cervicitis *per se*.

Defective secretion may be either insufficient, excessive or biochemically hostile to sperm. If cervical mucus is excessive it may be controlled either by light cautery, or very frequently, by sedation alone. Supplemental use of a systemically administered broad spectrum antibiotic during the first 10 days of successive cycles, may occasionally be helpful in the refractory case. If the cervical mucus is unusually scant it may be increased with estrogen in a low dosage, such as 0.1 mg. stilbestrol/day, so as not to inhibit ovulation. Cervical mucus that is biochemically hostile may be suspected by a poor Sims-Huhner, postcoital, or "P.K." test. Southam and Buxton⁷ recently reported on 70 postcoital tests made during the conception cycle in order to evaluate what constitutes a normal postcoital test. As has been previously stated, the cervical mucus should be of good quality, that is acellular, abundant, and of low viscosity. The authors used the generally accepted standards for evaluation of sperm migration as follows:

Good — 15 actively motile sperms/hpf (frequently several hundred)

Fair — 1 to 15 actively motile sperms/hpf (frequently several hundred)

Poor — Occasional or no sperm seen.

They concluded that a poor postcoital test with respect to quality of mucus and/or sperm migration did not imply poor prognosis for pregnancy, nor did poor sperm content of mucus necessarily indicate semen of poor quality. The article and commentary thereon suggest that the test is probably still important but that better standards from the standpoint of timing, prior abstinence et. al. need to be established. In this regard, Lamar, Shettles, and Delfs,⁸ in 1940, found that spermatozoa would travel through good cervical mucus in vitro at the rate of 2-3 mm per minute. If the distance from the external os to the fimbriated end of the tube is 15 to 18 cm., one could predict that the sperm could travel from the cervix through the tubes in less than one hour. If this be true it is no wonder why the postcoital tests, frequently done 1 to 4 or more hours after coitus, do not correlate well in the conception cycles. In other words, it would seem highly probable that the sperm of high vitality would be well progressed above the cervical level before the cervical mucus is usually examined.

It has been repeatedly observed that a poor postcoital test may be markedly improved in some cases by the use of precoital, buffered sperm nutrient douches, designed specifically to enhance sperm viability and motility. These include Nutri-Discs[®] (Ortho) and Proception-Sperm Nutrient Douche[®] (Milex).

The Spinnbarkeit, or stringiness of cervical mucus, has proven to be of value in estimating ovulation, and hence if done serially, would provide today's best answer in choosing the optimal time for coitus or for artificial insemination. The longevity of spermatozoa in cervical mucus parallels the degree of Spinnbarkeit, which reaches 10 to 20 cm the day before ovulation. When the Spinnbarkeit is poor at the estimated time of ovulation, it may be improved with a low dose of estrogen such as 0.1 to 0.2 mg. stilbestrol daily.

Regarding inaccessibility of the cervix, as with malposition of the uterus, the consensus of opinion is that this is rarely an important factor in infertility unless extreme.

Cervical stenosis, functional or anatomic, may be a factor in infertility, although obviously the sperm should be able to pass through the cervical canal, if blood and/or clots are expelled monthly. Nevertheless, conception has not infrequently followed cervical instrumentation such as the passage of a sound or following a D & C.

UTERINE FACTORS

Endometrial Dysfunction

Inflammation

Congenital and developmental anomalies

Hypoplasia

Myomata

Myometrial Dysrhythmia

Regular periods of essentially uniform quantity, quality and duration are usually associated with full progestational changes in the endometrium in most cycles. Whereas the basal body temperature (B.B.T.) chart is a rough guide to ovulation, the endometrial biopsy is a more definite way of both confirming ovulation and establishing a normal endometrial (end organ) response to both ovulation and the subsequent progesterone of corpus luteum origin, essential to normal implantation and nutrition of the fertilized ovum. It is often difficult to determine whether early unsuspected abortions related to an inadequate endometrial bed are due to a defect in the hormone stimulation or in the endometrial response. When the endometrial biopsy, ideally taken within 12 hours of menstruation, shows retarded endometrial glands corresponding to the 17th to 22nd day structure, especially when this finding is associated with a slow rise in the B.B.T. with the elevation sustained for only six to eight days prior to menstruation, a defective corpus luteum is likely. In this situation, Gilliam⁹ often finds the B.B.T. elevated two to four days after the onset of menstruation with the heaviest flow on the third to fifth day of menses which last seven to nine days. This condition has been called irregular shedding of the endometrium, and may be associated with irregular ripening microscopically. A D & C is often curative. If the condition recurs, progesterone alone, or in combination with estrogen and/or chorionic gonadotropin, may make maintenance of pregnancy possible.

As yet there is no adequate measure of the histochemical function of secretory endometrium although this aspect is being currently explored. However, the quantity and quality of the endometrial fluid,¹⁰ is probably as important as the cervical mucus. The influence of endometrial metabolites on motility, vitality, and fertilizing ability of spermatozoa remains a fascinating field for further investigation. Could it be that the poor correlation between improvement in the Sims-Huhner test by local treatment of cervicitis, and subsequent pregnancy, is due to the failure to consider coexisting endometrial inflammation and/or infection which could better be improved by oral estrogen and/or systemically administered antibiotics?

For the most part tuberculosis is the primary bacterial agent responsible for endometritis as a cause of sterility. In the United States, although the reported incidence of endometrial tuberculosis is lower than in India, Scotland, Israel, England and other countries, some of the larger infertility clinics are now reporting an incidence of about 5% among infertile women. Since approximately half the cases of tuberculous salpingitis presented associated endometritis, the incidence of tuberculous salpingitis in infertile patients, in some parts of the country, must approximate 10%. Endometrial

tuberculosis is picked up on routine endometrial biopsy and is many times unassociated with symptoms or tubercular history. Until very recently the patient with pelvic tuberculosis was doomed to permanent sterility. Now, with the newer antimicrobial agents, notably P.A.S. and I.N.H., at least three cases of subsequent uterine pregnancy, have been reported following resolution of pelvic tuberculosis. George Schaefer, who has recently written a book, "Tuberculosis in Obstetrics and Gynecology," and others working in this field, are confident that more success will follow and plead against the routine treatment of the disease by bilateral salpingectomy, especially in young infertile women with minimal disease. Recently 181 cases of endometrial tuberculosis were reported from Lady Harding Medical College in New Delhi, India.¹¹ Sixty-eight cases (37.5%) were cases of secondary sterility. They point out that pregnancy and pelvic tuberculosis may be associated though rarely. Rabau, in 1949, described a fatal case of abortion with pulmonary and pelvic tuberculosis diagnosed at autopsy. The simultaneous association of adnexal tuberculosis and uterine pregnancy was cited in one case by Holtz in 1940. Similarly, the association of active tuberculous salpingitis with ectopic pregnancy is uncommon. Kistner, Hertz, and Rock reported on one such case in 1951 and, at the same time, reported on 41 previous cases of tuberculosis salpingitis in association with tubal pregnancy. Sutherland,¹² of Glasgow, this year reported on still another series of 200 patients with tuberculosis of the endometrium. Sutherland concluded that unsuspected endometrial tuberculosis is relatively common. In 111 of 200 patients there was a history of extragenital tuberculosis. Most patients had normal menses, although tuberculosis may be responsible for changes varying from amenorrhea to hypermenorrhea. Ninety-five of 137 patients (70%) had negative endometrium after 84 days treatment with streptomycin and P.A.S. Among 53 patients receiving streptomycin and I.N.H. for the same period, a higher percentage (81%) had a negative endometrium. There was 19% recurrence in the first group and 8% in the second. The current thinking in this country, presented by Schaefer and Baum at the national meeting of the American College of Obstetricians and Gynecologists in November 1956, is that although antimicrobial therapy results in negative endometrium in most cases within six months, therapy should be continued at least two years, and that pregnancy should be postponed, at least during the first year of therapy.

Another philosophy of treatment was maintained by three investigators reporting from Chile in 1956. They cited 50 cases of genital tuberculosis treated with 1 Gm dihydrostreptomycin and 10-12 Gm P.A.S. daily for 3½ months. Because this medical regime resulted in apparent cure of 70 to 80% of endometrial lesions, but only 5 to 10% of tubal lesions, they still advocated bilateral salpingectomy in every case to avoid dissemination of the disease.

Congenital and developmental anomalies of the uterus contributing to infertility, such as a retroflexed, hypoplastic, bicornuate or didelphic uterus, are usually apparent after careful bimanual examination, transcervical exploration with a sound, or after hysterosalpingography.

Confusion exists regarding when to diagnose uterine hypoplasia, which is so often associated with one or more abortions, before the uterus becomes capable of carrying a term pregnancy. If the fundus is less than 3 cm. wide, it is hypoplastic to a significant degree. There is frequently a disproportionately long isthmus of 2 to 3 cm. and the cervix is often of normal size. Uterine hypoplasia represents a disorder of puberty and adolescence and is extremely resistant to growth stimuli other than repeated abortions. Monthly intracervical injections of 1.0 mg. estradiol benzoate, as advocated by Field-Richards¹³ in England, has resulted in some uterine growth. Of 30 infertile patients, with no cause other than uterine hypoplasia apparent, 24 conceived while on this regime. Paracervical (complete autonomic) denervation for dysmenorrhea, as recently described by Doyle, may enhance uterine growth by increasing the myometrial blood supply.

Occasionally retroversion of the uterus may be a factor in sterility by causing tubal distortion or kinking, pelvic congestion, and/or impaired drainage of the cervical canal. Some infertility workers use a pessary routinely on every movable retroposed uterus at the initial infertility examination. Tompkins¹⁴ in his recent article in defense of uterine suspension in the treatment of infertility lists the following criteria:

1. A fixed retroversion — impossible to correct with a pessary.
2. No other abnormality is found to explain the infertility except the fixed retroposition of the uterus.
3. Two years of involuntary infertility must have elapsed after correction of all other abnormalities known to impair fertility.

Although premature labors are more frequent in cases of bicornuate or didelphic uteri, in some cases these anomalies may be responsible for failure of repeated pregnancies to reach viability. In this instance Strassman's Metroplasty may result in increased fetal salvage. In this operation, the uterine septum or opposing portions of the bicornuate uteri are excised and the myometrium reunited, so as to form a single larger uterine cavity. In a 1955 review of the world literature Steinberg¹⁵ found reports of 61 pregnancies after this procedure with 57% living infants. Metroplasty, as well as salpingoplasty, will be greatly facilitated when purified vasopressin, recently synthesized by DiVigneaud, a biochemist at New York Hospital, becomes generally available. Vasopressin is injected directly into the myometrium and reduces blood loss markedly for a period of at least 20 minutes.

Fibromyomata when not over 5 cm. in diameter, unless submucous, probably have little bearing on fertility.

A submucous fibromyoma may hinder movement of sperm or blastula or may prevent normal nidation and/or adequate placental development. If a submucous fibromyoma has been demonstrated, especially in the wake of early or late fetal loss, myomectomy may result in a subsequent pregnancy reaching viability.

Bickers¹⁶ has graphically demonstrated with intra-uterine balloon studies, in certain hypersensitive individuals, that the emotions of fear, pain and disappointment alter the physiologic pattern of myometrial activity. Just as altered gastric motility is frequently associated with vascular and chemical changes in the gastric mucosa, it is reasonable to assume that vascular and biochemical changes may occur in the endometrium and endosalpinx under various emotional stimuli. Israel and others agree that women suffering from various forms of emotional distress may simultaneously develop discordant uterine contractions that are reversible. A good example of an extragenital stimulus of the myometrium is the uterine contraction evoked by the stimulus of nursing. In labor, it is probable that fear and emotional tension may cause primary uterine inertia. Finally there is some suggestion that myometrial dysrhythmia may play an indirect role among the causes of sterility.

TUBAL FACTORS

Adhesions

Fimbrial incompetence

Obstruction

Dysfunction

The tubal factor continues to be of extreme importance in infertility and is the greatest single demonstrable cause of infertility in women. According to Greenhill,¹⁷ 35% of all infertile marriages are known to be due to this factor. Contrariwise, the treatment of tubal dysfunction and/or disease whether by psychotherapy, medical or surgical therapy is, for the most part, disappointing.

Tubo-ovarian adhesions, from whatever cause, may interfere with the normal tubo-ovarian mechanism. Doyle¹⁸ in 1951 observed the migration of the ovum into the fimbriated end of the tube by simple flotation and tubal siphonage. More recently Doyle¹⁹ has demonstrated persistent tubal suction of the ovary sufficient to rotate it outward for 90 minutes under spinal anesthesia. No sweeping motions of the tube were noted. The observation was made after paracervical denervation, demonstrating that the tubo-ovarian mechanism does not require the mediation of the autonomic nervous system. Kurzrok and Streim,²⁰ in 1954, reported on the use of cortogen to soften and dissolve fine obstructing tubal adhesions with conception following in five out of eight cases. If tubo-ovarian adhesions are noted on culdoscopy, or at laparotomy, and if infertility persists after otherwise negative studies, surgical lysis of the adhesions may be justified.

Tubal obstruction, usually secondary to a previous inflammatory process may be demonstrated by tubal in-

sufflation (Rubin's test), hysterosalpingography, the Speck test, or by direct visualization through the culdoscope of the retrograde injection of various dyes through the uterus and tubes. The tubal insufflation is best utilized earlier in the workup. Greenhill agrees with Rubin that tubal insufflation with kymographic tracings have a combined anatomic and physiologic value. Greenhill¹⁷ further urges that tubal insufflation and hysterosalpingography have their own special field of usefulness and that competition between the two procedures is unwarranted. On the other hand S. R. M. Reynolds insists that the typical kymographic tracings of the Rubin test can be duplicated after salpingectomy, and that they therefore fundamentally represent variations in uterine muscle tonus rather than being a measure of tubal contractility or peristalsis. Tubal insufflation, which we usually do three to five days after the menstrual period, is done with carbon dioxide, flowing at the rate of 30 cc/minute at a pressure of 200 mm Hg. or less. Whether higher pressures may be harmful is still a point of debate. Shoulder top pain confirms patency of at least one tube, although a stethoscope with two diaphragms, one over each of the lower abdominal quadrants may be informative in regard to bilateral patency, when there is no leakage around the cervical obturator of the uterine cannula. Although desirable, it is not always necessary to have shoulder top pain to call the test positive for tubal patency. Volume of CO₂ used, individual variation in the peritoneal absorption rate, as well as individual variation in pain threshold are additional factors determining the presence or absence of shoulder top pain. Occasionally, with the nitrites and/or repeated insufflation at a lower flow rate, a presumably blocked tube (by spasm or fine adhesions) may later become patent. It is to be noted that atropine and the belladonna alkaloids have little, if any, effect on tubal spasm. In fact some workers report an increase in tubal tonus with these drugs.

To more conclusively demonstrate utero-tubal anatomic derangements, including partial tubal obstruction, and for unequivocally demonstrating bilateral tubal patency, we must resort to hysterosalpingography. Currently the swing is away from the oily media, such as lipiodol in this procedure, because of:

1. Damage to the tubal wall and
2. Systemic or local irritative reactions such as the formation of granulomas and adhesions which further complicate the problem of infertility.

It is important to take a preliminary film, to check patency of the dry cannula, to displace all air from the cannula with the radio-opaque dye, to select the proper medium for the particular case, and to straighten out the sharply angulated fundus by cervical traction. Fluoroscopy may be helpful both in demonstrating tubal peristalsis and unsuspected lesions, which might be missed on the routine A-P hysterosalpingogram. With fluoroscopy, additional care must be taken to keep the patient's radiation exposure to a minimum to avoid the,

at least theoretical, induction of genetic mutations by ovarian radiation. One of the newest media for hysterosalpingography, Salpax, apparently combines the advantages of aqueous and polyvinyl media of safety and low toxicity with none of the disadvantages. It has a somewhat slower absorption (1-2 hours) as compared to the aqueous media. Salpax has been claimed to have the properties of radiopacity and viscosity best suited for hysterosalpingography.²¹ It may be autoclaved without losing these properties. Salpax[®] is a combination of the blood expander, P.V.P., and sodium acetate. As suggested by Thomas,²² 4 to 8 cc are used. More than 8 cc is rarely needed. The uterus is filled; this is best demonstrated fluoroscopically. Five minutes later a film will usually conclusively demonstrate tubal spillage and the extent of pelvic scatter. Three per cent have abdominal cramps 1/2 to 1 hour after injection of salpax. These cramps may be promptly relieved by i.m. Chlor-trimeton.[®] They have not occurred in those patients tested for sensitivity by placing a drop of Salpax sublingually, at least 30 minutes before the dye is injected. One granulomatous lesion has been reported in response to this dye after its widespread usage. Since no report of guinea pig inoculation was made, I don't believe tuberculosis was adequately ruled out in this case. Sweeney, at the New York Hospital, during the meeting this year of the American Society for the Study of Sterility, reported that more accurate diagnoses will be made by taking a film after injecting only 1 to 1.5 cc Salpax, provided there is a 30 second delay after injection to eliminate turbulence of the medium. A second film is taken after no more than a total of 5 cc Salpax has been injected. My philosophy regarding hysterosalpingography, which almost everyone agrees has some therapeutic, as well as diagnostic value, is that it should usually be done after all other factors are corrected or made optimal for fertility, in order to yield the highest possible conception rate.

The Speck Test,²³ i.e. the appearance of P.S.P. in the urine after its intrauterine injection, due to passage through patent tubes, and peritoneal reabsorption, appears to be 85% accurate for tubal patency and can be done with less expensive equipment. The unfortunate drawback to this test is the higher incidence of false positive results than with other methods. Speck²⁴ recently reported the test falsely positive in seven out of 32 cases following tubal ligation.

While kymographic tracings have until recently been the only method, albeit controversial, for measuring tubal peristalsis, some newer procedures warrant trial and exploration. Scheffery²⁵ injected various non-irritating dyes into the cervical canal and if they could be recovered by aspirating the cul-de-sac, the procedure would theoretically demonstrate tubal patency. He then demonstrated, by placing oily media in the cul-de-sac, that with normal peristalsis and ciliary action of the tube, the dye could be recovered in the cervical mucus in three to five days. Similarly Decker and Decker²⁶ de-

posited starch granules over the fimbriated end of the tube through the culdescope. They concluded that recovery of the starch granules in the cervical mucus was good evidence of anatomic and functional normalcy of at least one tube. In the future it seems likely that increasing emphasis will be placed on tubal function tests.

Surgical procedures at best may restore tubal patency, but not necessarily tubal function. Current evaluation of this problem is that patency may be achieved in up to two-thirds of the cases, but in the best of hands, pregnancy occurs in only 25% of cases following salpingoplasty. Surgery to establish tubal patency is inadvisable after resolution of tuberculosis, for although it is possible to restore patency, it is not possible to restore function. Without restoration of function, a very high incidence of ectopic gestation results. Polyethylene tubing, because of its inert qualities, has been utilized to advantage as an intrauterine-endosalpingeal splint for six to eight weeks in the various types of salpingoplasties. However the problem of postoperative adhesions accounted for the lower percentage of success with the earlier operations. This has been partially corrected by three different methods:

1. Mulligan, Rock, and Easterday²⁷ (1954) have used a polyethylene hood over the tube and ovary to prevent tubo-ovarian adhesions to the operative site and believe their increased subsequent pregnancy rate justifies the need of a second laparotomy to remove the hood. At the second operation any small impeding adhesions may be lysed.
2. Ten Berge and Tik Lok²⁸, in the Netherlands, used a hood of chorionamnionic membrane, and later amnion alone, obtained from cesarean section. As the membrane is absorbed, this procedure obviates the necessity of repeat laparotomy. Pregnancy rate following this procedure has not yet been established.
3. Topkins, Frenkel, and Siegler²⁹, in their series of various types of salpingoplasties with polyethylene, have reported a third method to prevent postoperative adhesions. They have used continuous postoperative intra-peritoneal perfusion of the area of reconstructive surgery with a solution containing 150 mg. hydrocortisone, 10 mg. heparin, and 100,000 units of penicillin per 1000 cc 5% dextrose in water. The perfusion is continued at 10 to 15 drops per minute for five days. The polyethylene is then removed after the customary six to eight week interval.

Siegler and Hellman³⁰, recently reported on a national survey re: salpingoplasties and summarized the results of 84 M.D.'s who had done 10 or more of these procedures. There were 2285 operations with 378 live births or a success rate of 16.6%. In order of percentage of success, salpingolysis was most effective with salpingoplasty of the fimbriated end of the tube, tubal implantation into the uterus, and resection—anastomosis fol-

lowing in that order. Here an analogy may be drawn to the lower incidence of stricture at the anastomosis, following implantation of the injured ureter into the bladder vs end to end anastomosis. For completion, we should mention the Estes operation i.e. cornual implantation of the ovary. Up to 14% pregnancies have been reported, although this operation is gradually falling into disrepute because of postoperative pain, cyst formation and frequent reoperation before pregnancy is achieved. Greenhill¹⁷ raises the question; are we justified in performing abdominal surgery when we cannot promise more than one chance in four or five of success?

A discussion of the tubal factor would not be complete without mentioning the possibility of preserving fertility by conservative surgery for selected cases of ectopic pregnancy. The conservative procedure includes linear salpingostomy, removal of the conceptus, and is followed by hemostasis of the incision without re-suture. Wexler, Kohn, and Birnberg³¹ as well as Tompkins³² have recently added cases of intrauterine pregnancy to the literature following conservative surgery in the case of ectopic gestation in the remaining tube and/or in the event of bilateral ectopic gestation.

OVARIAN FACTORS

Anovulation

Defective Ovum

Luteal Inadequacy

Displacements

Adhesions; the Peritoneal Factor

Use of Cortisone

In 1951, Hertig concluded the ovum may be available for fertilization for only 12 hours. If we assume the spermatozoa retains its fertilizing power at least 24 hours there may be a margin of 36 hours time; 24 hours before and 12 hours after expulsion of the ovum in which a fruitful insemination may occur. Unfortunately ovulation cannot be predicted closer than a 24 hour period. For practical purposes with respect to the timing of coitus and/or homologous or donor insemination it is hoped that future research will uncover a better method for accurately predicting ovulation. For the most part, the current tests for ovulation all pertain to function of the corpus luteum. With the exception of mittelschmerz, which is as yet of unknown cause and therefore of no validity, it is only when the progesterone effect is detectable that we may assume ovulation.

The current means of determining ovulation are:

1. Basal body temperature graph in which ovulation usually occurs at the low point from which the graph rises to a higher post-ovulatory plateau due to the thermogenic effect of progesterone.
2. Spinnbarkeit, or stringiness of the cervical mucus which reaches 10 to 20 cm. or more before breaking at ovulation. The cervical mucus characteristically becomes grossly and microscopically clear

and is less viscous than at other times of the month.

3. Serial endometrial biopsies, demonstrating subnuclear vacuolation in the cytoplasm of endometrial glands in the ovulatory and/or very early secretory phase.
4. Fern test. The degree of fern formation in dried cervical mucus is closely related to receptivity of the mucus for spermatozoa and signifies estrogen effect unopposed by progesterone.
5. Occult midmenstrual bleeding, as recently demonstrated with serial benzidine tests which become positive on the 15th day, one to three days after ovulation.³³ This phenomena is suppressed with small doses of stilbestrol which do not suppress ovulation.
6. Rise in urinary pregnandiol, which may not be apparent if for some reason progesterone is secreted before corpus luteum formation. This method is not generally available, is very expensive, and is therefore impractical.
7. Sperm survival time which closely coincides with the maximal spinnbarkeit.
8. Degree of vaginal cornification on serial vaginal smears is probably the most reliable indication of ovulation, but again, not practical for routine office use.

Anovulation, of whatever cause, is frequently associated with amenorrhea, and is an absolute deterrent to conception. Relative ovarian failure, the most common cause of amenorrhea may respond to a four to six months course of cyclic estrogen-progesterone therapy. Occasionally cortisone will help in the resolution of the Stein-Leventhal ovary, but more often, in the typical case of polycystic ovaries, the amenorrhea will be corrected and pregnancy ensue following bilateral wedge resection. The mechanism of the re-establishment of regular ovulatory cycles after this procedure is not clear. The following explanations have been suggested:

1. Decreased tension within the ovaries may result in more adequate circulation and therefore more adequate function.
2. Inhibition of pituitary F.S.H. by ovarian estrogen may be diminished.
3. Novak cites Lipschutz's law of follicular constancy as an explanation—i.e. by wedge resection there is a decrease in the total number of follicles so that the remaining follicles receive more adequate (or less dispersed) pituitary stimulation.
4. With improved circulation to the ovary after wedge resection, there may be a transient sharp rise in serum estrogen with consequent release of luteinizing hormone (in line with Kupperman's use of i.v. estrogen to induce ovulation cf. below).

There is no completely satisfactory way of inducing ovulation. At the October meeting of the New England Obstetrical and Gynecological Society, H. S. Kupperman, of New York, suggested the cyclic use of 20 mg.

i. v. premarin on about the 12th or 13th day (to simulate the physiologic pre-ovulatory estrogen peak). As a means of inducing ovulation, Kupperman postulated the large dose of estrogen worked by "opening the trap door" to allow the luteinizing hormone (L.H.) to be released from the anterior pituitary. A change in the L.H./F.S.H. ratio is known to precede ovulation. Robert Greenblatt of Augusta, Georgia, in commenting on the mechanism of the induction of ovulation by intravenous estrogen, suggested an indirect pathway of action through the hypothalamus as more likely than "opening a trap door" at the pituitary level. It is of further interest that a significant percent of patients not ovulating after i.v. premarin have been found to have Stein-Leventhal type ovaries, and have later ovulated following wedge resection. In some cases the i.v. premarin was followed in about two days by one or more doses of parenteral progesterone.

The role of pituitary and ovarian radiation in inducing ovulation, while often effective, remains controversial from the genetic standpoint, so that we still need to discover a dependable, completely safe method of inducing the refractory ovary to ripen and discharge ova. Haman and Fullenlove³¹ reported on a series of 105 patients treated with low dose pituitary and ovarian irradiation for anovulation and sterility after each case had been studied several months and no other uncorrected factors were apparent. With a 200 KV machine (0.5 mm Cu filter—half layer 1.08 mm Cu) they gave three treatments at weekly intervals. A large single field was directed to the pelvis, alternating anteriorly and posteriorly, and a small field to the sella turcica alternating anteriorly and laterally. One hundred r, measured in air, was given to both the pelvic and pituitary fields on the same day. Seventy-three of 105 patients with amenorrhea treated by this technique developed regular, ovulatory menses. A higher percentage of success was obtained the shorter the period of amenorrhea. Forty-six of 88 married patients who were followed became pregnant. The mechanism of radiation—induced ovulation is speculative.

1. The ovary may be stimulated by alteration of the biochemical factors related to ovarian function and/or through radiation hyperemia.
2. X-ray may help to destroy or remove the inhibitory influences on normal gland activity.

The patient has always been advised not to have intercourse until the treatment is completed. In this regard it is hard to lose sight of the higher abortion and stillbirth rates reported from Hiroshima and Nagasaki, among those within 4000 to 5000 m of the atomic bomb. In the same areas a higher incidence of fetal microcephaly was noted among those irradiated during pregnancy, especially between the 12th and 18th week.

Fullenlove³⁵ as well as Kaplan, who pioneered in this field, and many others believe that genetic objections to radiation therapy for anovulation and sterility are not valid because:

1. Such a small number of childbearing women in relation to the total are treated.
2. Total dosage is small and may not even double the mutation rate in such women.
3. It has been demonstrated that second and third generation of children of irradiated mothers are normal, and even the objectors agree no immediate effects are expected.
4. It has not been proved that doubling the spontaneous mutation rate would be deleterious or that such changes actually occur in the human with the above described therapy.

In a panel discussion at the June 1957 meeting of the American Society of Sterility it was apparent that the geneticists and gynecologists are gradually reaching a common ground. The panel was moderated by C. L. Buxton, M.D., of New Haven, Connecticut, and composed of Drs. Liane Russell, Roberts Rugh, James Morgan, S. Leon Israel, and Abraham Rakoff. The sentiments of this panel were best summarized by Israel's concept that until the geneticist's objections are disproved, extreme caution must be used in selecting the cases most likely to be helped. The possibility of latent genetic defects being passed on, recessively, due to an increased mutation rate to future generations, must be weighed against the value of placing a baby in the arms of a barren woman. Israel now restricts his indications for radiation to a very few patients in the 20 to 30 year age group, with relatively short term secondary amenorrheas or anovulatory oligomenorrheas associated with sterility. Israel, like Rakoff, is using pituitary radiation less often, and has reduced his two pelvic port dosages from 75 to 35 r measured in air once a week for three weeks. It is anticipated that by carefully restricting the indications to very favorable cases, the numerical possibility of a marriage between progeny of irradiated mothers will be reduced, and thus the theoretical possibility of microcephaly, et al in their children will occur rarely, if at all.

Defective ova in relation to fertility are not generally correctable. It may be a chance phenomena and is known to account for a high percentage of spontaneous abortions. So-called blighted ova are more common in later reproductive years after irradiation.

Luteal inadequacy, although primarily an ovarian cause of infertility, we have discussed previously in connection with the premenstrual endometrial biopsy, which shows a lag in progesterone effect. Many of these patients may have a prolonged secretory phase with failure of the daily B.B.T. to fall until after the onset of menstruation — a situation possibly representing a subclinical abortion.

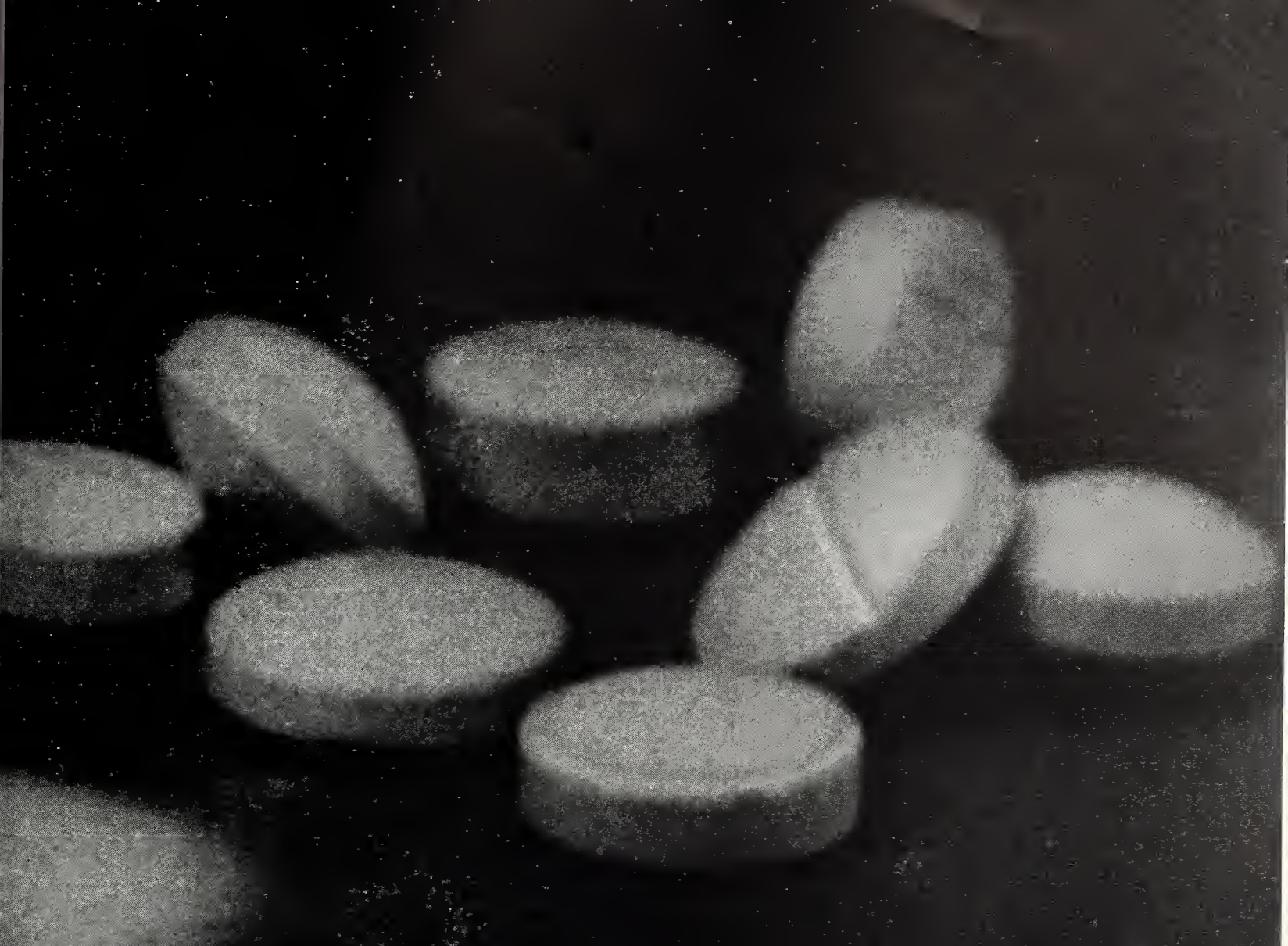
Murray³⁶ described a 25% pregnancy rate following surgical correction of the "peritoneal factor" in 68 patients. Pain was almost universal and 47 patients had abnormal menstrual cycles. Lesions of the pelvic peritoneum were either primary (originating in neighboring inflammations or as sequelae to surgery) or secondary

2=8



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(1) Boger, W. P.; Strickland, C. S. and Gylfe, J. M.: *Antibiot. Med. & Clin. Ther.* 3:378 (Nov.) 1956.

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(extensions of lesions, principally inflammatory, of the generative organs). The longer the interval between peritoneal injury and lysis of adhesions, and or excision of the peritoneal lesions, the better the chance of improving fertility. Culdoscopy, when available, may be useful in the earlier diagnosis of the peritoneal factor.

I would like to mention some recent work with cortisone in the treatment of infertility. Greenblatt³⁷ in a recent article relates back to his trial of cortisone in 1951 in amenorrheic women with hirsutism-cases of either Stein Leventhal syndrome, or mild adrenogenital syndrome, or both, associated with a moderate elevation of 17 KS. Although hirsutism was only slightly modified, cortisone therapy produced a favorable influence on cyclic ovarian function. Recently Greenblatt treated 37 cases of amenorrhea or other marked menstrual disorder with an average of 50 mg. cortisone, by mouth daily, and later 20 hydrocortisone t.i.d. Supplemental measures were instituted:

1. Thyroid $\frac{1}{2}$ gr. to counterbalance any hypothyroidism induced by cortisone.
2. K.C.L. 5 gr. t.i.d. added to compensate for increased urinary excretion of potassium.
3. High protein, low carbohydrate, low fat, low salt diet.

Twenty-five of these 37 women developed regular ovulatory menses. Ten of the 25 became pregnant. The mechanism of action could be either:

1. Decrease ACTH production allowing pituitary gonadotropin production to be increased. (Sohval and Soffer in 1951 reported an increase in urinary gonadotropins after ACTH or cortisone) or
2. May modify pituitary activity in some unknown manner to permit more orderly release of pituitary gonadotropins.

Other means, not mentioned in Greenblatt's article by which cortisone might enhance fertility include:

1. The suggestion by Kurzrok and Streim that cortisone may be of value in softening adhesions that block closed, or partially closed, Fallopian tubes.
2. Close functional inter-relationship between thyroid and adrenal. It is known that cortisone administration may result in a lowered BMR, by suppressing the thyrotropic hormone. The relationship of the thyroid gland to infertility has always been regarded as important, although not completely understood.
3. Libido may be increased during administration of cortisone probably due to the cortisone induced sense of well-being.

Greenblatt concluded:

1. Infertile women with amenorrhea, anovulatory menses or other menstrual disorder, especially when accompanied by varying degrees of hirsutism should have a 3 to 6 months trial course of cortisone before being subjected to wedge resection or radiation therapy.
2. Increased urinary ketosteroids is a good, but not

necessary, indication for cortisone therapy in the treatment of infertility associated with menstrual disorders.

3. Hirsutism is not prerequisite for cortisone therapy of ovulatory disorders.

Finegold³⁸ reported an interesting group of 100 couples, 91 primary and 9 secondary sterility cases thoroughly worked up with negative findings, as is so often the case. Twenty-one of these couples became pregnant while on 25-50 mg. cortisone/day for four months, and another 2 became pregnant within 2 months after cortisone was withdrawn.

PSYCHOGENIC FACTORS

Infertility is usually a psychosomatic problem and is rarely due solely to psychogenic causes. In some women infertility is due to rejection of pregnancy for unconscious reasons. It is also common knowledge that a normal intrauterine gestation frequently occurs when the infertile patient ceases in her concerted effort to achieve pregnancy, takes a vacation, or decides upon adoption.

At the outset, it is important to dispel various fears. This is usually better accomplished by a sincere, understanding attitude on the part of the physician, than by a detailed psychoanalysis. In particular, the fear of permanent sterility must be alleviated by reassurance. Deutsch³⁹ believes that the most frequent cause of sterility is unconscious fear of any or all phases of reproductive function, most often due to guilt over puberal sex experiences. Quoting statistical successes is not enough. In each individual case, a certain amount of optimism on the part of the physician is important in establishing the patient's faith in the effectiveness of the procedures to be undertaken. Reassurance by the nurse at the initial interview may be very helpful. Whatever the nature of the fears may be, a group orientation lecture with open discussion, as practiced by Stone at the Margaret Sanger Research Bureau, is undoubtedly the most effective way of dealing with this problem. Such group orientation is actually a form of group psychotherapy.

Deutsch³⁹ believes there are at least five personality types associated with psychogenic sterility:

1. The physically and psychologically infantile woman, at first dependent upon her mother, then later upon her husband. This type has often experienced puberal pregnancy fantasies all the way to and including anorexia nervosa. She subconsciously rejects a child who would compete for her husband's attention and affection, thereby interrupting her child-parent relationship to her husband.
2. The motherly type who spends all her motherliness on her love for her introverted husband. Her husband is not only unprepared for fatherhood, but requires a mother and freedom from family responsibility for his development. Fearing the

husband's ability to be a good father, the motherly type rejects pregnancy. She is actually willing to achieve motherhood, but her sterility is in reality an adjustment to the apparent needs of her husband.

3. The type who is diverted from motherhood by other interests, who may, like the second type, have the emotional and physical capacity for motherhood. This type may include not only the feminine-erotic woman who is consumed with the physical aspects of marriage, but also the obsessive-compulsive woman who is devoted to an emotionally determined interest or ideology. These women remain sterile to avoid a conflict that might otherwise result from a split in their affective interests.
4. The masculine-aggressive type who refuses to accept femininity. She may either remain sterile or, quite often, may find an outlet for her aggressiveness in pregnancy and motherhood.
5. The emotionally disturbed type who perceives the poverty of her own emotional life and tries in vain to overcome her deficiency by means of pregnancy.

At the 1957 meeting of the American Society for the Study of Sterility, Warner of New York, and Bos of Montreal both emphasized the value of determining the patient's motivation in evaluating the potential extent of her psychogenic sterility. Warner mentioned the following examples of poor motivation:

1. Douches taken for any reason after coitus — always represent at least a subconscious desire to avoid pregnancy.
 2. Avoidance of coitus at mid-cycle.
 3. Discontinuance of infertility studies without expending any effort.
 4. Flee when advised to consult with a psychiatrist.
 5. Complain of the inconvenience of appointments.
 6. Complain of pain caused by the infertility studies.
 7. Delay several years before seeking help.
 8. Would not adopt a child if infertility investigation fails.
 9. Initiated infertility studies only because urged to do so by husband, grandparent, or other relative.
 10. Fixed grief reaction to a previously deceased child, with subsequent infertility investigation representing a penance for the wife's guilt over the death of her child . . . or possibly the child was not wanted in the first place.
 11. Desire pregnancy to repair an unstable marriage.
 12. Wish to be like other adult women.
 13. To reprove her mother (hostile mother identification) i.e. by demonstrating that she can do a better job raising children than her mother did.
 14. To have someone (a child) who can love her.
 15. Cooperate poorly during infertility investigations.
- It is evident that none of these ill founded motivations

satisfy the genuine feminine purpose prerequisite to the achievement of motherhood.

Ford¹⁰ suggests the following provocative questions to detect the poorly motivated patient with an emotional conflict which may adversely affect fertility:

1. What does it mean that you are unable to become pregnant?
2. Why do you want a baby?
3. Would you raise your child the way your mother raised you? What differences would you practice?
4. What sort of a man is your husband? How could you improve him?
5. Would you rather work or keep house?
6. Do you want a boy or a girl? (although the normal woman wants a daughter, the neurotic woman expresses anxiety in this regard and intuitively senses her inability to cope with her own sex).
7. Is there pain during intercourse?
8. Do you enjoy intercourse?
9. Do you think men or women have the advantage in sexual relations?
10. How many children do you want? (the normal woman wants at least two. The neurotic woman really wants none but frequently indicates she wants "at least one" for some poorly motivated reason.)

MECHANISMS OF PSYCHIC INFLUENCE

During the recent World War, evidence was abundant that mind and emotions affected menstruation and ovulation with a resultant hypothalamic type amenorrhea and sterility. A variety of latent or obvious psychologic disturbances are believed, through the hypothalamus to prevent the release of L.H. by the pituitary, thus not only to prevent ovulation, but also, in some instances, to interfere with the production of estrogen from the ovarian follicle, so that the endometrium atrophies and menstruation ceases. However, if menstruation continues with repeated anovulatory cycles, estrogen production may be so excessive as to cause endometrial hyperplasia, a condition likewise associated with sterility.

Marsh and Vollmer¹¹ believe that a selective pelvic vascular congestion or "blushing beneath the collar" may occur due to emotional problems. Pelvic congestion, in turn, may result in insufficient nutrition to the ovum, so that it fails to reach viability before the follicle matures.

Some women with apparently non-patent tubes later become pregnant. In many, the tubes are not occluded by physical changes, but by spasm at the utero-tubal junction. The mechanism for this spasm is not clear. Marsh and Vollmer¹¹ suggest the spasm may represent a manifestation of fear or hostility for which social custom forbids a more outward display.

Myometrial dysrhythmia with alternating ischemia and congestion, mediated via the autonomic nervous system, may interfere with the nutrition of the fertilized ovum,

so that either implantation does not occur, or if it does occur, early abortion may follow.

Vaginal leakage of semen after intercourse due to spasm of the muscles of the pelvic diaphragm, either represents rejection of husband or pregnancy, or is the result of a competitive type intercourse as practiced by the masculine-aggressive type woman.

Excessive cervical secretion due to anxiety or emotional tension may have a deleterious influence on fertility, although proof is lacking.

This very brief review of the psychogenic factors in infertility fails to include many of the less well understood entities, such as one-child sterility and the psychogenic factors in the male, which have been well summarized by de Watteville.⁴²

ARTIFICIAL INSEMINATION

Artificial insemination with donor semen, "A.I.D.," or therapeutic insemination" as Kleegman prefers to call it, has been reported to result in 85% pregnancies within six months of treatment in the best hands. The procedure must be agreed upon, and preferably requested by both parties, who should be sincere, emotionally stable, and above average intellect. It is advisable that patient's obstetrician is not aware of the method of conception since he would otherwise be committing a legal fraud by signing the birth certificate with the husband stated as the father of the child. Recognized indications are:

1. Sterility of the husband or such pronounced necro-spermia or oligospermia that pregnancy seems impossible.
2. Dysgenic factors in the husband which would make it unwise for him to reproduce.
3. Rh positive husband and Rh sensitized wife.

An arbitrary limit of 100 siblings per donor has been set in one clinic in England for fear that marriage between siblings not known to each other would assume dangerous proportions. However, if the indications for this procedure remain rigid, the incidence of incest, unbeknownst to the married couples involved, will be extremely rare.

Kleegman, in discussing Portnay's article⁴³ on artificial insemination, mentions two interesting observations relative to predetermining the sex of the child: 1) Insemination with semen which is consistently oligospermic results in a preponderance of girl babies, and 2) when insemination is done very soon before ovulation, the babies are usually boys, but if insemination is done two or more days before ovulation, the babies are more often girls. As when doing homologous insemination, Kleegman recommends using the first portion of the split ejaculate, which contains the greater number of spermatozoa.

One of the difficulties with this procedure is that it is not known what decision the individual court may hand down regarding the legitimacy of a child conceived by A.I.D. For instance, a Canadian court held

the procedure was adultery and the child, illegitimate. A resolution passed by the American Society for the Study of Sterility at its June 1955 annual meeting should help to clarify the current legal confusion, although it carries no real legal worth of itself:

"If it is in harmony with the beliefs of the couple and doctor, donor artificial insemination is a completely ethical, moral, and desirable form of medical therapy.

"Conditions under which donor artificial insemination is acceptable include:

- "1. Urgent desire of the couple to have such therapy applied to the solution of their infertility problem.
- "2. Careful selection by the physician of a biologically and genetically satisfactory donor.
- "3. The opinion of the physician, after thorough study, that the couple will make desirable parents.

"Those physicians who have carried out donor inseminations for several decades can attest that in many cases it is a more desirable procedure for acquiring a family than adoption.

"One great advantage of donor insemination is that it provides the opportunity for the husband to share the months of his wife's pregnancy and her childbirth. From observation over many years, the Membership is impressed by the almost universal good results achieved in respect to the children and the entire family unit. The fact that, in some instances patients have returned for as many as four children by donor insemination is further proof of the happiness it bestows."

The legitimacy of the child conceived by A.I.D. has not yet had occasion to be determined in Maine. A.I.D. seems intellectually sound, but morally dubious. For these reasons, I have had no experience with this procedure. Schirmacher states that artificial insemination with an extramarital donor may give rise to feelings of shame and dissatisfaction in the married couple. I think we must continue to look for the later undesirable psychologic effects before unequivocally condoning A.I.D.

SUMMARY

1. Since 85% of women become pregnant within the first year of normal married life, and since there appears to be a strong anti-fertile factor (? psychogenic) the longer the duration of marriage without conception, a plea is made for earlier infertility investigation, i.e. whenever advice is sought after a 12 month period of involuntary sterility, regardless of the age of the couple.
2. The prerequisites for fertility, as well as the causes and recent therapies for infertility at the various anatomic levels, have been discussed.
3. Since male factors are solely or partly responsible in at least 40% of infertile marriages, investigation should begin with the male. This sequence

- gives the added advantage of determining the willingness of the husband to cooperate. As the first step at least 2 or 3 semen analyses should be made after the usual period of continence.
4. An increasing number of completely asymptomatic cases of tuberculous endometritis in infertile women is being discovered on routine premenstrual endometrial biopsy. With the new antimicrobial agents, the patient with minimal pelvic tuberculosis is no longer doomed to permanent sterility.
 5. The tubal factor is probably the greatest single cause of infertility in women. Tests for tubal patency have been perfected. A simple reliable test for tubal function is needed.
 6. Salpingoplasty will restore patency in 2 out of 3 cases, but pregnancy occurs in less than 1 out of 4 postoperatively. This discrepancy is probably due not only to postoperative tubo-ovarian adhesions, but also to our inability to restore normal tubal function.
 7. Conservative surgery for the management of ectopic pregnancy: linear salpingostomy, removal of the conceptus, and hemostasis of the incision without re-suture is mentioned as a means preserving fertility.
 8. A more accurate method for predicting ovulation is needed, to assist in the optimal timing of coitus as well as homologous or donor insemination.
 9. More effective, entirely safe ways of inducing ovulation are needed. The use of intravenous estrogen, as advocated by Kupperman, is the best method currently available.
 10. The role of ovarian and/or pituitary radiation in inducing ovulation remains controversial from the genetic standpoint, and should be used very infrequently, if at all.
 11. Cortisone therapy appears to produce a favorable influence on cyclic ovarian function in many cases. Infertile women with amenorrhea, anovulatory menses, or other menstrual disorder should probably have a 3 to 6 month trial on cortisone before being subjected to ovarian wedge resection or radiation therapy.
 12. Determining the patient's motivation for undertaking infertility analysis is the most significant factor in determining the potential extent of psychogenic sterility.
 13. Artificial insemination with donor semen is probably desirable in some instances. The legal status of both the procedure and the child conceived thereby remains to be determined.
 14. The usual infertility problem is due to several causes, all of which may have to be improved or corrected before pregnancy is achieved.
 15. There is some question whether the problem of infertility is as yet subject to rational statistical analysis, because of the large number of variables

involved. It is nevertheless a challenging problem to both patient and doctor. I can imagine no greater personal satisfaction in the practice of medicine than to have helped in solving some of the more difficult and complicated infertility problems.

16. It is known, from sizable groups of untreated infertile women, that 50% eventually conceive. Infertility analysis and treatment may only hasten conception; it therefore, behooves us never to accept full credit for success. As physicians let us remember we are but instruments in HIS hands.

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Clinico-Pathological Conference

Maine Medical Center—April, 1957

Discussion By

EUGENE P. McMANAMY, M.D.*

JOSEPH E. PORTER, M.D.**

On the first admission of this 63-year-old white female, she complained of several episodes of vomiting and jaundice during the past three years. An X-Ray taken elsewhere showed gallstones. The family physician put her on a diet and medication, which gave her some relief until approximately six months ago, when she began to vomit large amounts of food and bile. Since then she has experienced pain in the upper abdomen, and at times her abdomen would become quite distended. She has been jaundiced at times, and has had clay-colored stools. She took Seidlitz powders for relief of pain. For the past few months she found it necessary to avoid fatty or highly-spiced foods.

Family History: Non-contributory. Usual childhood diseases; typhoid fever and phlebitis at age 16. Hysterectomy 20 years ago, prior to which she received radium.

Physical examination: Temperature 98.6°, pulse 80, respirations 20, blood pressure 110/70. She was apprehensive, with no acute symptoms; was not jaundiced. Chest normal; heart sounds regular, of good quality. Abdomen was soft; there were no masses palpable. There was a medial abdominal incision and slight tenderness to deep pressure in the right upper quadrant.

At operation, there were dense adhesions of the colon to the abdominal wall. The gallbladder was filled with stones and buried in adhesions, and freed with moderate difficulty. The common duct was opened without incident, the hepatic duct probed, and a 4 mm. dilator passed into the duodenum; no evidence of stones. Exploration of the lower abdomen disclosed a mass the size of a fist, involving the terminal ileum and cecum. It was delivered with some difficulty, and was interpreted by the surgeon as an old inflammatory mass, in the center of which lay a partially-obiterated appendix. The mesentery was greatly thickened. This mass was not removed, and the pathologist's report on the gallbladder was chronic cholecystitis, cholelithiasis, and healed appendicitis with obliteration of the lumen.

Second admission two years later. She had apparently made a normal convalescence from her previous operation, until approximately nine months ago, at which

time she developed pain in the right lower quadrant and irregularity in bowel habits. At times she felt that she could palpate a mass in the right lower quadrant. The pain became more intense, at times requiring medication; she lost her appetite and now felt that she had lost weight. For about two weeks she had been on a low-residue diet and her bowel habits became regulated. She had not noted any blood in any of her stools.

Physical examination: Temperature 99.4°, pulse 84, respirations 24, blood pressure 120/78. Frail-appearing, apprehensive woman. Chest clear, heart sounds regular. There are operative scars over the abdomen and a mass the size of an orange in the right flank, seeming to lie closely beneath the right rectus scar. Vaginal and rectal examinations were negative.

X-Ray suggested a tumor of the ascending colon, but it could not be stated with certainty whether this was of intrinsic or extrinsic origin.

Laboratory data: Essentially normal. Hb. was 76%, WBC. 6,600; urine essentially normal. Prothrombin time 90% concentration.

Exploratory operation was performed at this time. She made an uneventful recovery and was discharged on the 12th postoperative day. There was a considerable degree of fluctuation in the blood pressure postoperatively; on the second day it had risen from 120/70 to 160/90, but it had returned to its former levels on the third day; on the fourth day there was another systolic rise to 150; on the following day it returned to 106.

Third admission three years later became necessary because of fever and diarrhea of three weeks duration. X-Rays taken at this time were essentially negative.

Laboratory examinations were non-contributory, except for leukocytosis of 15,400, with differential of 73% polymorphonuclears, 18% lymphocytes, and 9% monocytes.

Fourth admission two years later occurred because of a 30-lb. weight loss. Since her discharge she had had episodes of fever and diarrhea, lasting one to two weeks, and occurring approximately four to five times in the past year. Stools examined by her family doctor had been positive for occult blood. Her appetite had been poor.

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Physical examination: A frail-appearing woman, in no distress; blood pressure 102/70. On another occasion it was reported as 96/57. Abdomen: no masses were palpable, and there was no tenderness elicited.

X-Rays were essentially normal. Laboratory determinations were all essentially normal, except for 2-plus occult blood finding in one stool examination. Her prothrombin concentration was normal, as was the cephalin flocculation.

Her final admission was two years later, at age 72, because of increasing weakness.

Physical examination: Temperature 98.6°; pulse 88; respirations remained constant throughout her stay at about 20. The pulse, on the other hand, showed considerable variation during her final hospitalization. There was a Grade II systolic murmur at the base. There was an abdominal mass across the upper abdomen, consistent with an enlarged liver, and on rectal examination the rectum seemed to be smaller than normal, with probable implants on the abdominal wall. The chest and abdominal films were essentially normal.

Laboratory data: Hb. 68%; RBC. 3.5 million; WBC. 7,500; differential normal. Urine: pH 5.0; specific gravity 1.011; 10 mg. of albumin; sugar negative; 1-3 WBC. 24-hour urine specimen: 4-plus positive for serotonin. Urea nitrogen 35 mg.%. Chlorides 98 mEq/l., sodium 150 mEq/l., potassium 3.45 mEq/l. Total protein 6.4, albumin 4.0, globulin 2.4 gm.%.

After palpating the liver it was noted that there was visible flushing of the skin of the neck and arms. She was placed on Meticorten,[®] and seemed to improve somewhat. Her appetite improved. On the 25th day after admission, she complained of flushing of her arms, and spots before her eyes. Her appetite continued to improve, however. The liver remained palpable throughout her hospital stay, and she did not develop ascites. She was discharged on the 80th hospital day.

DR. EUGENE P. MCMANAMY: After reviewing this protocol, it becomes rather obvious, I think, that we are dealing with symptoms and signs which can be divided into three distinct groups. In the first group we find those symptoms and signs pertaining to the biliary tract; in the second group those which are relative to an abnormality of the cardiovascular system, and in the third group those which denote pathology in the lower gastrointestinal tract.

We can dispense with the first group of signs and symptoms which pertain to the biliary tract by believing that the disease so-described in the case history of this patient was a self-limiting independent entity, which was properly treated and no longer bears any relation-ship to the present illness.

This leaves us with two fairly discrete groups of signs and symptoms, which represent gastrointestinal pathology on the one hand, and cardiovascular disease on the other. Here we may have two synchronous diseases, or we may be confronted with a single disease entity, effecting simultaneously two different systems within



FIG. 1. Barium enema. Mass in the right lower quadrant causing distortion.

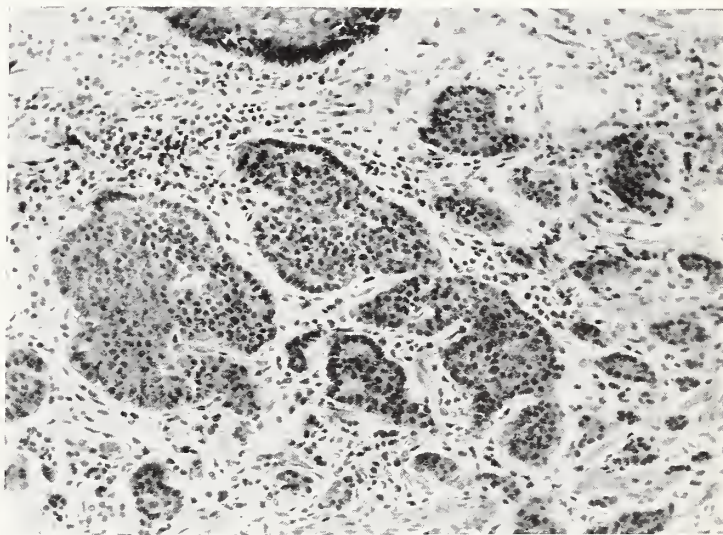


FIG. 2. Microscopic section from tumor mass showing characteristic architecture of malignant argentaffinoma.

the body. Both of these possibilities will be considered in our differential diagnosis. The symptoms, signs, and the pertinent laboratory and clinical data related to the gastrointestinal tract, may be listed as follows:

1. Fist-sized mass. 2. Thickening of the mesentery.
3. Pain and palpable mass, right lower quadrant. 4. Fever, leukocytosis, and bouts of diarrhea. 5. Normal liver studies. 6. 30-pound weight loss. 7. Blood in the

stools. 8. Gradual liver enlargement. 9. Barium enema studies. 10. Seeding of the abdominal wall.

The symptoms and signs of significance concerning the cardiovascular system are as follows:

1. In the beginning, no abnormal findings of the cardiovascular system.
2. Fluctuations of radial pulse.
3. Variations in blood pressure readings.
4. Appearance of a Grade II systolic murmur at cardiac base.
5. Visible flushing.
6. X-Ray evidence of enlargement of heart.
7. The appearance of cardiovascular disease after the liver became noticeably enlarged.

Let us for the moment discuss the possibility of two separate disease entities, as being responsible for the patient's illness.

The diseases of the gastrointestinal tract in this instance may be divided into inflammatory or neoplastic in type.

The inflammatory diseases, would of necessity have to be of the chronic type, in this particular case, and should include the following:

- A. Tuberculosis.
- B. Regional enteritis.
- C. Regional entero-colitis.
- D. Ulcerative colitis.

Of these four chronic disease entities, the most likely one, taking all things into consideration, including the description of the findings at the first abdominal operation, would be ileo-colitis.

However, from the progress of the case, as it is studied, one begins to lose interest in the chronic infection theory. The liver enlargement, the abdominal wall implants, the obvious malignant course of the disease, in spite of the gastro-intestinal operation, which I presume resulted in the removal of the local lesion, and finally, I don't believe that the x-ray studies of the large intestine are characteristic of chronic inflammation of the ileo-cecal region.

Dr. Gibbons, would you be kind enough to show us the films, and to describe the findings of the X-ray examinations that were made of the ileocecal region?

DR. JOHN GIBBONS: These films were taken during the barium enema. In the first film the colon filled well, but there is a peculiar narrowing of the right colon which is kinked upward and medially by a dense mass. Apparently the terminal ileum did not fill in a retrograde direction, but when barium was given by mouth it distended the tip of the cecum and terminal ileum. However, there is still evidence of a lesion which is displacing the ascending colon upward and medially. There is a very smooth indentation of the normal colon mucosa and I think we can say that this mass is intramural, but mostly extra-luminal, and involves the wall of the bowel.

DR. MCMANAMY: Thank you very much, Dr. Gibbons. And now I feel convinced that we can rule out chronic inflammatory disease of the ileocecal region, as possible diagnosis and rule in the possibility of malignancy of this area.

The first neoplastic disease which comes to mind is, of course, adenocarcinoma of the cecum, and the second most common malignancy of this area would have to be a malignancy of the terminal ileum.

Many of the clues presented in this case history could easily fit the picture of adenocarcinoma of the cecum; however, there are a few important facts which mitigate against this diagnosis.

In the first place, I would have expected the surgeon to recognize the possibility of malignancy, and not have dismissed the involvement of the ileocecal region as due to inflammation, as he did. The fist-sized mass did appear as inflammation to him.

In the second place, the stool should have contained blood more frequently, and earlier in the course of the disease. It is characteristic for patients to pass tarry stools frequently with cancer of the cecum.

In the third place, there would be no reason for the positive serotonin in the urine in adenocarcinoma of the colon. I have purposely avoided mention of the 4-plus serotonin until now, and do so only to strengthen the case against adenocarcinoma of the cecum.

In the fourth and final place, if we accept adenocarcinoma of the cecum as a diagnosis in this case, then we must consider a separate synchronous disease entity of a vascular nature, to explain the obvious progressive cardiovascular symptomatology.

One possible disease entity secondarily affecting the cardiovascular system which might be considered, is a pheochromocytoma. However, the classical picture of episodes of sweating, vasomotor constriction, coldness, blanching, and skin mottling of the extremities, and transitory hypertension, are lacking in this case.

A malignancy of the terminal ileum such as lymphoma or sarcoma, should be lightly considered, but dismissed, as there is lack of sufficient evidence of either of these entities being present. However, a malignancy of some other type is a strong possibility.

If we can indict a single disease entity as responsible for both the gastro-intestinal pathology in the beginning, and the cardiovascular abnormalities later on, we can probably achieve an accurate diagnosis in this case. Such a disease entity would be a malignant argentaffinoma of the terminal ileum, with regional and hepatic metastasis.

Malignant carcinoid arises either in the terminal ileum or the appendix, and characteristically involves the ileo-cecal region and progresses locally. The disease frequently spreads beyond the bowel wall into the regional lymph nodes in the mesentery, and will in its involvement resemble a picture similar to that described at the first abdominal operation, and readily be mistaken for a chronic inflammatory reaction. Hepatic metastasis can and does occur in malignant argentaffinoma, and is identified by not only palpable liver enlargement, but a specific syndrome, which has been described in the literature. Biorch, Axen and Thorsen,⁶ among others, have been cited as first calling attention to this syn-

drome of hepatic metastasis and cardiovascular changes. The syndrome may be briefly characterized as follows: peculiar cutaneous flushes, chronic diarrhea, respiratory distress, and valvular lesions of the heart. These valvular lesions are pulmonary valvular stenosis and tricuspid regurgitation. These changes can be demonstrated by systolic murmur at the base of the heart, and X-Ray evidence of right-sided cardiac enlargement. The cardiovascular changes are said to be due to serotonin or its metabolites.

I should like now to have Dr. Gibbons display and describe the several chest films which we have on this case, giving special attention to the early and late ones, to see if he can demonstrate a change in the size of the heart, which would resemble a right-sided enlargement.

DR. GIBBONS: I shall be glad to show the several chest X-ray films.

There are three chest films. One was taken in April of 1951, one was taken a year later, and then another six months later. The heart has enlarged since the beginning. I can't say definitely which chamber or whether both ventricles are enlarged, but I would suspect the right ventricle. There is no evidence of heart failure.

DR. MCMANAMY: Dr. Gibbons agrees that there is evidence of right-sided cardiac enlargement, and this, along with the other previously mentioned cardiovascular changes, is characteristic of the syndrome found in malignant argentaffinoma.

We have already satisfactorily explained the gastrointestinal findings from the very beginning, including the palpable liver metastases as due to carcinoid.

There remains only the 4 plus serotonin in the urine in this case to be discussed. The presence of serotonin or its metabolite, 5-hydroxy-indol-acetic acid, in the urine, in amounts such as were found in this case, is proof positive of metastatic malignant argentaffinoma.

My diagnosis in this case is malignant argentaffinoma of the terminal ileum, with regional and hepatic metastases.

DR. EUGENE MCCANN: Did the surgeon explain why he did not take out the mass?

DR. JOSEPH PORTER: The surgeon felt that it was of inflammatory origin, possibly regional ileitis, and did not remove it.

Is everyone agreed on this diagnosis? The patient died at home, and an autopsy was not obtained. The basis for the anatomical diagnosis is the surgical specimen on her second admission. The specimen consisted of the terminal ileum and a portion of the right colon. The loops of intestine were agglutinated by numerous tumor nodules, and the primary tumor was found to be in the terminal ileum. On cut section it had a yellowish color, and had invaded the entire thickness of the intestinal wall, causing a U-shaped kink through which the tumor had extended into the adjacent mesentery. Microscopic examination of this proves it to possess the

characteristic architectural pattern of a carcinoid tumor. A representative portion is shown in the microphotograph. It would be my opinion that this case clinically, and especially in view of the histology of the surgical specimen, fulfills the criteria for the malignant carcinoid syndrome. This was first described in 1953 by Isler and Hedinger.¹ In 1954 Thorsen² and his associates reported three cases, and suggested that the syndrome might be due to the secretion of serotonin of 5-hydroxy-tryptamine, and in the same year Pernow and Waldenstrom³ demonstrated serotonin in the blood and urine of patients suffering with this syndrome.

DR. JAMES PARKER: Are there any other conditions which will give a positive serotonin reaction?

DR. PORTER: The test performed here was the qualitative test of Sjoerdsma, and according to a recent paper by Moeller,³ 1120 urine specimens were examined on normal individuals, and they found that the excretion ranged between 2 and 9 mg. of 5-hydroxy-indol-acetic acid daily. This amount does not give a positive qualitative test until levels approximating 40 mg. daily are excreted.

DR. PARKER: Is there anything significant about the presence of metastatic tumor in relation to the whole body? Is there any relationship as to why the left side of the heart is not involved in this disease?

DR. WILLIAM AUSTIN: One theory that has been suggested by McCusick⁴ is that the valves in the right side of the heart are involved only because the lung removes a large part of the serotonin from the circulation.

DR. PORTER: A case of carcinoid syndrome in which a patent foramen ovale and involvement of all four valves was present was reported by McCusick.⁴

DR. GIBBONS: How long did this patient live after the first operation?

DR. PORTER: She was operated on in 1949 and died in 1957.

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The President's Address*

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The subject that I have chosen for this annual President's Address is a very delicate one and I trust that I can deliver it without shocking you. It is a subject that is very seldom mentioned, and one that most people ignore, especially the general public, but it is alas too true; too much of a reality. It deals with indigence and absolute poverty within the medical profession.

I give credit for the material in this address to a paper published in the New York State Journal of Medicine, October 1, 1956 by Beverly C. Smith, M.D., entitled "Indigency Among Doctors." Also, to an article on Social Security by A. R. Felty, M.D. published in the Connecticut State Medical Journal in March, 1957.

It is known that from 10 to 20% of the doctors past the age of 65 die in a greater or lesser degree of indigence. How many more suffer the hardships of poverty and live their declining years, the subject of parental or other charity, we do not know.

According to Dr. Smith:

"The practice of medicine has changed with the changing times. The cost of a medical education has increased tremendously. Before a young physician can nail up his shingle he has to go through periods of internship, residencies, and certifications before specialty boards; all of which cost time and money, and when he does nail up his shingle, he is 30 to 35 years old and very often heavily in debt. And too often, family responsibilities have accumulated while he was still in training, adding to the existing load. Now he opens an office, and goes deeper into debt for equipment, a car, a home, furniture, etc. etc.

Although he does not realize it, he has only some 30 years in which to pay off his indebtedness, his current taxes, insurance, living expenses, and later his children's education. If he is far-sighted he will put aside a fund for his declining years, but as he is a notoriously bad business man, more often than not his money is not too wisely invested. It was said that during the depression of 1929-1932 some 200 doctors were on direct relief in a certain mid-western city.

Most every doctor lives beyond his means, in order to raise his social status and with the hope of getting higher returns from his profession. The general public believes that every doctor is rich, and as a result of

this belief, the doctor is expected to contribute more than any one else to charities, and also to keep physically fit to answer all calls day or night.

Then when he gets in the forties and fifties other and new obligations appear. Parental and collateral family obligations suddenly occur and are often devastating. The competition of younger men, decreased professional activity, and a lesser interest in advancement, bring along a dulling of the intellect, and if the doctor lives long enough, further decreased activity and geriatric pathology.

Dr. Smith has received numerous letters that reflect real tragedy: lack of domicile, empty larder, clothes too few and too tattered to be decent, a disposal of personal belongings in order to buy enough to eat, all of which contribute to break a man's spirit.

The young and busy doctor says that this will never happen to him, but he does not know of the number of doctors of distinction to whom this has happened. Since becoming President of the Physicians' Home, Dr. Smith has come into contact with many distinguished colleagues who in their active years were regarded as singularly financially successful.

In the course of his duties, he has received many touching letters, and here is an example:

"Dear Doctor:

My sincere thanks for your kind inquiry regarding my physical and financial welfare. With the exception of a recent cold I am in pretty good health for one who is eighty-eight years old.

"The amount of \$125 a month that the Physicians' Home sends me is quite adequate for my basic needs as I make it so. My room costs me \$10 a week and this with my laundry amounts to \$45 a month. I eat one meal a day with an occasional snack. This is no hardship to me as I was not reared as a pet. I put myself through four years of medical school and earned the money to do so. To meet my dues I once lived on 24 cents a week for 5 weeks, and another time I lived on one meal a day for nine months. I am not a big eater at any time, and have I believe obtained my growth. So that, while a little hungry at times, I am able to stay well and satisfied with what I have. The amount I receive from the Physicians' Home should be sufficient were it not for the fact that I am trying to pay off my wife's funeral expenses by appropriating \$25 a month for that purpose. Again may I thank you for your kindly interest and good wishes."

*Presented at the 104th Annual Session of the Maine Medical Association, June 1957.

Doctor Smith has hundreds of similar letters on file.

In my Town of Van Buren, during my lifetime, five doctors passed on to their reward. Two were in absolute poverty, two left a house and nothing else, and the last one left \$150,000.00, but he had never practiced medicine.

Now, my dear friends, why should such a state of affairs exist in our profession? What could we do, what should we do to financially help ourselves when we get old and can no longer earn even a few dollars for our basic needs?

Do you know that there are now, in this nation, more than 120 million workers and their dependents who have Social Security, retirement incomes, or some other form of old age pensions?

Do you also realize that we are now the only large group that is not covered by some form of Social Security, and that we are one of the few remaining groups contributing indigents to the general population?

What could we most easily do to remedy this appalling situation? Can we as a group finance our own security? Or can we as individuals establish our own retirement plan? Or should we join the rest of the nation and accept Social Security?

Let us answer the first question. Can we as a group finance our own security? and as cheaply as the government? The answer is an emphatic *no*. The Government furnishes life insurance to its employees and to members of the armed forces so much cheaper than the great insurance companies that it has no competition. It can do the same with Social Security. It is therefore not too strange that our Life Insurance Companies accepted Social Security twenty years ago, and that all their employees, including their presidents, their actuaries, and their medical directors are covered by Social Security.

The second question. Can we as individuals establish our own retirement plan? Although we have always been free to do this, the Jenkins-Keogh bill would make it easier for us. But, human nature being what it is, who among us will not use the retirement money for some pressing need and keep putting off the establishment of our own private Social Security fund?

Should we join the rest of the nation and accept Social Security? Right now we are the only large group that has not accepted it and we are thus the subject of comments such as these, that I have heard many a time. "You doctors don't need Social Security, you are all rich anyway." This is certainly good public relations — IN REVERSE. We seem to think that we 200,000 doctors are the only level-headed persons in the United States, and that the 120,000,000 who have accepted Social Security are all hoodwinked fools. The public thinks otherwise.

Organized medicine brings forth three major objections to Social Security for doctors; let us examine them and see how sound these objections really are.

The first objection: Social Security is an entering

wedge for Socialized Medicine. There are now millions of people included in Social Security and it seems rather far-fetched that the addition of 200,000 doctors would bring along Socialized medicine. When Socialized Medicine does come it will be due to economic reasons and not because doctors are covered by Social Security.

The second objection: The law is actuarially unsound. As I have stated before no private company can furnish insurance or establish a Social Security plan as cheaply and effectively as the government. Since our great Life Insurance companies have accepted Social Security at its onset and since all their employees, including their presidents, their actuaries, and their medical directors are covered by Social Security, they must believe the program is sound, and they should know. No one hears them attacking the program.

The third objection; No doctor ever retires until he is worn out. At least 85% of the physicians between 65 and 75 are in active practice and therefore would get no benefits from Social Security. In answer to this, why wait until you are completely worn out to retire? Why do doctors keep on working after 65? Because they also have to eat and as their savings are not sufficient for their expenses they have to keep on working.

Industry retires its workers at 65. The government employees retire at 65. So does a member of the armed forces, and even our hospitals require active staff members to retire from their posts at a definite age, usually at 65. Social Security does not force a doctor to retire, but it makes it a lot easier for him to do so, if he wishes.

Many physicians have heretofore been opposed to Social Security without really studying the provisions of the Act.

Social Security provides retirement income to all over 65 and a basic security income to widows with children under 18. In addition the 1956 law provides for those over 50 years of age who are totally disabled.

A self-employed worker, earning \$4200.00 or more a year will now pay \$141.75 per year. This figure will gradually increase every 5 years until 1975, when the cost will be approximately \$265.00 a year. Since most physicians earn \$4200.00 or more a year they would make these maximum payments and also receive the following maximum benefits.

On retirement at 65 an individual physician will receive a monthly payment of \$108.50 and when his wife becomes 65 they will together receive \$162.80 a month — a total of \$1953.60 a year.

If he chooses to work after 65, according to the 1956 brochure of the Social Security Administration "No matter how much you earn during the year, benefit payments may be made for any month in which you neither worked for wages of more than \$80.00 nor rendered substantial services in self-employment." Thus if he chooses to take a vacation of four months, he will

receive payments during that period. At age 72 he will receive, each month, his full retirement income, regardless of his earnings.

At his death, his widow, if over 62, receives \$81.40 during her lifetime.

In the case of his death at an earlier age, the law provides for his widow with two or more children; \$200.00 a month until the children become 18. Payments are resumed when the widow reaches 62.

At the death of the insured at any age, a lump sum payment of \$255.00 is paid to the surviving spouse.

Under the amended bill, the worker will receive monthly payments in the event of total disability after the age of 50.

In summary, the younger physician receives protection for his family in the event of his death. As he gets older he gets protection in case of disability. At the retirement age of 65, he is privileged to receive a substantial monthly income as long as he lives, as does his widow who survives him.

Moreover, every benefit payment under Social Security is exempt from all taxation. In this respect it differs from almost every other form of income. In these days of high income taxes, this exemption provides very substantial savings. And remember, furthermore, in a depression, when your other savings could very easily melt away, Social Security would still be available.

Social Security is not a swindle, nor is it Federal charity, as some claim. It was underwritten by the citizens of the United States as a measure of protection against the hazards of old age, just as truly as we Americans have underwritten the National Defense program as a protection against possible aggression. If we as citizens have underwritten the program of Social Security, why not take advantage of its benefits.

It seems to me that the opposition to Social Security comes from a fairly small and select group of doctors who are financially independent. I maintain this is an unfair stand, and I leave it up to you to judge the merits of this Social Security program.

RECENT TRENDS IN INFERTILITY ANALYSIS AND TREATMENT — *Continued from page 287*

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Across The Desk

U. S. Loans Now Offered Physicians & Dentists

Small Business Administration is now making loans available to physicians, dentists, architects, lawyers and the other professions. To qualify, applicants need only be in private practice, solo or group. This is a most unusual and sudden step for SBA, which up to now has limited its aid to retail businesses and small industry. Just over a year ago SBA extended loan eligibility to proprietary hospitals and nursing homes. Intention was to include medical groups also, but the idea was dropped as a result of AMA opposition.

The Federal loan agency is not publicizing this new policy, other than to notify regional offices to start taking applications from doctors needing funds to build or remodel offices, purchase equipment or for any other constructive purpose.

Participation by hospitals and nursing homes in SBA loan program has been disappointingly scant. Only 30 applications in all have been approved to date, totaling \$2,622,950. However, House last week passed a bill (HR 7963) lowering SBA's maximum interest rate from 6 to 5 per cent and effecting other inducements calculated to attract borrowers.

Increase of \$21 Million

Acutely economy conscious this year, Congress had trimmed the Administration's requests for funds in every appropriations bill to be sent to Capitol Hill since January — until the one-package bill carrying operating funds for Labor Department and Department of Health, Education & Welfare came up. Even this one has been reduced by \$110 million, in the over-all, but the

total allowed for National Institutes of Health — \$211 million — actually is \$21 million more than White House asked for. (This is exclusive of \$30 million granted for research construction assistance).

Of this \$21 million increase, \$9.5 million goes into cancer; heart, arthritis and neurology receive \$2.5 million each, and \$4 million goes to mental health.

Two-thirds of the cancer raise is earmarked for chemotherapy investigations. National Heart Institute will devote nearly one-half of its \$2.5 million increase to a study in aging. To broaden and stress research in gastroenterology, \$500,000 in research grants money has been turned over to National Institute of Arthritis and Metabolic Diseases for distribution.

East's Thiamine Lack

Thiamine stands high among nutritional deficiencies in our Northeast states, according to Department of Agriculture. A 1955 food consumption survey which sampled households in New England, New York, New Jersey and Pennsylvania disclosed that 22 per cent of families were not getting enough thiamine in their diets, a deficiency exceeded only by calcium (30 per cent). In no other region of U. S. did thiamine rank as high as second in the deficiency scale. Note: Single copies of the published findings, "Dietary Levels of Households in Northeast," are obtainable free upon request to Office of Information, U. S. Agriculture Department, Washington 25, D. C.

All 55 Contracts for Medicare Are Renewed

All of the government's Medicare contracts expired

June 30 — 55 of them — but every one has been renewed, without a single exception. New contracts are for periods of seven to 17 months, arranged in escalator fashion so that there will be no more than six terminations in any one month hereafter. Lieut. Col. Ralph Richards, who had responsibility for contract renewals under general supervision of Maj. Gen. Paul I. Robinson, Medicare director, credited "the fine spirit" of AMA, state medical societies and other parties directly involved for the expeditious handling of negotiations.

Chapin Is New Medical Chief of Civil Service

Chairman Harris Ellsworth of Civil Service Commission, has announced appointment of Dr. Eugene R. Chapin as medical director. He succeeds Dr. Verne K. Harvey, who resigned to become director of professional services at Veterans Administration Medical Center in Indianapolis. The new medical director is 54, a native of Meadville, Pa., and a graduate of College of Medical Evangelists. For past 10 years he was assistant medical director of Civil Service Commission.

Four Panels Tentatively Selected for Symposium

Panel topics have been tentatively approved for four sessions of Fifth Annual Symposium on Antibiotics to be held in Washington October 2-4. They are: Host Resistance and Chemotherapy; Rheumatic Fever Prophylaxis: Antibiotics as Antitumor and Antiviral Substances; Role of Laboratory Findings in the Treatment of Infectious Diseases.

Hospital Construction Shows Big Gain in 1957

In first six months of 1957, estimated value of *all* new construction put in place was 3 per cent greater than corresponding period of 1956. But the gain in *private* hospital and institutional construction was 50 per cent, and 26 per cent for *Tax-supported* projects in this category. Expressed in dollars, hospital-institutional construction in first half of this year totaled \$393 million, compared with \$283 million in 1956. For all new construction, total rose from \$20.9 billion in first half of 1956 to \$21.5 billion this year.

For last month alone, private construction in this category stood at \$43 million — a 72 per cent increase over June, 1956. Corresponding gain for public projects was only 24 per cent — \$31 million last month compared with \$25 million in June, 1956. Note: Comparative estimates are made jointly by Departments of Commerce and Labor.

Senate Approves Three-Year Subsidies in Physiatry

The Senate recently passed, without dissent, a bill (S.1971) permitting Department of HEW to subsidize all three years of residency training in physical medicine. Under present Vocational Rehabilitation Act, training grants are limited to *two* years. This bill

extends authorization so as to take a resident right through hospital instruction requisite to specialty certification. A subcommittee of House Education and Labor Committee held a hearing last month on companion bill (HR 7155). Witnesses were measure's sponsor, Rep. Harry Haskell, Jr., (R., Del.), and Mary E. Switzer, director of Office of Vocational Rehabilitation in HEW.

At the recent hearing, most of questioning came from Rep. Edith Green (D., Oreg.), a committee member. Her objective: To ascertain why so many doctors are fiercely opposed to Federal aid to public schools but quite tolerant of government subsidization of medical training and other forms of higher education. Note: Rep. Green also is not convinced that doctors' stipends in this program should exceed those for social workers as much as they do.

About 100 physicians received financial aid in this program during past year and number will be 20 per cent higher in current fiscal year. Some \$3 million is being appropriated annually to OVR to support training in rehabilitation counseling, physical and occupational therapy, public health and other fields, as well as medicine.

Post-mortem Changes Confuse Blood Alcohol Tests

Because alcohol may diffuse out of the stomach after death, special care must be taken in measuring alcohol levels in the blood during autopsy, two San Francisco physicians have reported.

Blood alcohol levels are commonly determined by taking blood from the sac surrounding the heart during autopsy, Drs. Henry W. Turkel and Houghton Gifford said in the July 6 Journal of the American Medical Association.

However, they have discovered that the alcohol level of blood in this pericardial sac is frequently higher than the level in the femoral vessels of the abdomen and legs. This happens because alcohol ingested just before death diffuses out of the stomach into the nearby areas after death, they said. The post-mortem diffusion process does not extend as far as the femoral vessels.

Knowledge of the blood alcohol level at the time of death is frequently very important in criminal or civil court proceedings. Because of the "gravity of decisions" attached to these determinations, they must be accurate, the authors said.

Since determinations made from blood drawn from the heart area may be inaccurate, they recommended that blood from the femoral vessels be used instead.

The authors noted that these errors in measuring blood alcohol levels do not occur in examining the blood of the living, since tissue barriers are still intact and the circulating blood provides for a uniform distribution of alcohol throughout the blood stream.

Dr. Turkel is from the coroner's office of the City and County of San Francisco and Dr. Gifford is from

the department of pathology, Stanford University School of Medicine.

Population’s Natural Immunity to Polio Increasing

Natural immunity to polio among the general population has been steadily increasing since 1915. Writing in the July 6 Journal of the American Medical Association, Drs. Robert L. Vought and Morris Greenberg said they studied polio death and paralysis rates in New York City from 1915 to 1944. They found that polio death rates among successive generations of children under 15 years have been reduced 75 to 90 per cent from 1915. Since there were no artificial immunization methods available before 1954, they attributed this drop to increasing natural immunization and better medical care and sanitation.

They predicted on the basis of the 1915-1944 figures a further drop of another 75 to 90 per cent by 1969. And artificial immunization methods such as the Salk vaccine may cause a still greater drop in mortality and paralysis, they said. Even if they do not, the outlook for future generations is "quite encouraging" on the basis of natural immunity.

Natural immunization against polio occurs when the virus is spread from the gastrointestinal or respiratory

tract of patients or carriers to other persons, who in turn become carriers and usually develop immunity without developing active cases of the disease. Just how this process works in a population is not completely understood, they said. But it is known that as more people are exposed to the virus, more develop natural immunity and fewer develop actual cases.

Dr. Vought is associate medical director of Bristol Laboratories, Inc., and Dr. Greenberg is public health director of the bureau of preventable diseases of the New York City Department of Health.

Polio Assistance Act Winds Up With 1% of Funds Not Used

Public Health Service reporting on wind-up of the poliomyelitis vaccine grants program estimates that all but \$400,000 of an original \$53.6 million voted by Congress had been spent by the states. Upon expiration of the law June 30, only four states had not taken up all of their federal allotments: Arkansas, 9.9%; Indiana, 10.2%; Nebraska, 29.9%; Wyoming, 15.2%. PHS says that by the time all vaccine ordered under the program has been used, about 29 million children and pregnant women will have received 70 million injections.

MAINE MEDICAL ASSOCIATION BUDGET
1957-1958

The House of Delegates at the annual session in June approved the following budget for 1957-1958:

Office Expenses:	
Salaries:	
Executive Director	\$10,000.00
Secretary-Treasurer	3,000.00
Stenographers	6,000.00
Travel:	
Exec. Secretary & Sec’y Treasurer	2,000.00
Supplies:	
Telephone, Rent, Etc.	3,800.00
Equipment	600.00
General:	
President’s Expenses	1,000.00
Annual Session	3,400.00
Council	650.00
Committees:	
Medical Advisory (Legal Counsel)	1,000.00
Legislative	1,500.00
National Education & Public Relations	1,500.00
Other Standing & Special Committees	1,000.00
Delegates:	
American Medical Association	800.00
New England States	300.00
New England Council Dues	100.00

Fall Clinical Session	400.00
Annual Roster	250.00
Woman’s Auxiliary	250.00
Journal:	
Printing & Plates	16,000.00
Travel	400.00
Office:	
Salaries	
Secretary-Treasurer	1,500.00
Stenographer	3,000.00
Supplies, Telephone, Rent, Etc.	1,000.00
Total	\$59,450.00
Estimated income from State Dues, Journal Advertising and Subscriptions, and Exhibit Space Rentals is \$60,425.00. Income from Investments, approximately \$700.00, will be used for special projects of the Association. (In 1956-1957, \$500.00 of this income was used as a grant-in-aid to a medical student.)	
The House of Delegates also approved the following recommendations: (1) That any unused portion of funds budgeted for the Legislative Committee (\$1,500.00) and for the A.M.A. Delegate (\$800.00) be deposited in a Special Account. (2) That \$2,000.00 be set aside for an Association Building fund each year that the economy of the Association will permit.	



DEAN H. FISHER, M.D.
COMMISSIONER

State of Maine

Department of Health and Welfare

Maine's Approach To Alcoholism

Dr. Robert Fleming, director of the alcoholic clinic at the Peter Bent Brigham Hospital in Boston and a member of the five-man committee on alcoholism of the American Medical Association, in summarizing Maine's program on alcoholism, after it had been in operation a year, stated that its approach was "both wise and prudent."

On a professional visit to Maine at that time, Dr. Fleming expressed his opinion that the need for huge costly hospitals for the treatment of alcoholics in any State was exaggerated. After four years of experience with the State program, many Maine physicians are inclined to agree with the evaluation made by Dr. Fleming in 1954.

Since that time, the Maine Medical Association has named a sub-committee on alcoholism with Gilmore W. Soule, M.D. of Rockland as the chairman. Other members of this committee are Nicholas Fish, M.D., Portland, Paul Jones, M.D., Union, Philip Chase, M.D., Farmington and Melvin Aungst, M.D. of Fort Kent.

This committee from the Maine Medical Association has conferred with the Advisory Committee of citizens appointed by the Governor and has also worked in close co-operation with Max P. Good, director of the State program since its inception in 1953. When the State program was set up, an Advisory Committee of seven persons was named and former State Senator, Paul L. Crabtree of Island Falls has been chairman of this Advisory committee since its inception. Other members are: Mrs. Edmund Socec of Augusta, Lewis Youngs of Bangor, the Rev. Father John Feeney of St. Patrick's Church, Lewiston, Paul Jones, M.D., Union, (Dr. Jones is both a member of the Maine Medical Association Committee on alcoholism and the State Advisory Committee), the Rev. Ellis J. Holt, Auburn and Dr. John Thurlow, Waterville.

Historically, the American Medical Association officially recognized alcoholism as a treatable illness in 1950 and rated it at that time as the nation's fourth most important public health problem. It was a year later that a Maine Study Commission completed a survey in this State and reported that there were twenty-

five thousand excessive problem drinkers and recommended that corrective measures be undertaken.

Dr. Fleming's opinion in 1954 was the practical result of necessity as well as the "wise and prudent" approach he termed it, because of the fact that the original appropriation for the Division which is a unit of the Department's Bureau of Health, was only \$9,000 for each of the two fiscal years of 1954 and 1955, therefore it was obvious that no major program could be carried out at that time.

When, with the appointment of Mr. Good as Director in 1953, the Maine program got underway, this State became the twenty-eighth in the nation to carry on an official State program regarding this public health problem. The director, Mr. Good, worked alone the first year and studied the programs of other states. He carried on a general program of information and worked closely at all times with the medical profession in determining the most feasible steps to be taken on a state-wide basis. Dr. Soule's committee from the Maine Medical Association proved of especial value to the director in setting up the four Alcoholism Counseling Centers at Portland, Auburn, Presque Isle and Augusta.

These counseling centers are for the purpose of providing friends and families advice about alcohol problems: to screen alcoholics for treatment; to refer them to private physicians for physical examination; to help obtain hospitalization where indicated and to otherwise assist those concerned. Up until the present time, the director, Mr. Good, and his assistant, Mr. Rowland J. Hastings, Jr., who joined the division in 1955, have manned the four counseling centers in the four corners of the state. It is now planned with a small additional appropriation from the Ninety-eighth Legislature that the Bangor and Portland centers will be maintained on a full-time instead of a one-day a week basis. This is expected to take place in September when two counselors will be added to the staff of the Division of Alcoholic Rehabilitation, making it a four-man unit. The two new staff members are: Richard Whittemore who will be assigned to the Bangor Counseling Center and Oron Kirkby to the Portland Office.

These two men have just completed the regular course of study at the Yale School of Alcohol Studies in New Haven, Connecticut in preparation for their new duties. The Portland and Bangor Centers had been operated one day a week by a director and his assistant.

Others from Maine who attended the annual summer session at the Yale School were: Miss Ruth T. Clough, Health Education Consultant for the Department, the Rev. Father John Feeney of St. Patrick's Church, Lewiston in his capacity as a member of the State advisory Committee on Alcoholic Rehabilitation, Captain J. J. Simonson of the Salvation Army Staff in Portland and Quentin Unger, Director of Health and Physical Education, State Department of Education.

All services at the counseling centers are free, but when outside professional services are required and when there is inadequate financial ability to pay for such services on the part of the client, the Division has assumed a limited financial responsibility in those situations that have been authorized on a selective basis. This limited program is worked out in the respective areas in co-operation with the medical profession and is proving to be of considerable success.

In these selected cases a medical evaluation of an alcoholic's physical condition can be arranged for through the co-operation of local physicians and in certain other cases, also limited in scope, a psychiatric evaluation may be secured when it is indicated by a physician. As is obvious, these services are necessarily limited because of restricted funds.

A. The Division has as program objectives the introduction of factual alcohol education at the public level so that:

1. Alcoholics will be able to have their condition diagnosed and thus seek whatever help and treatment is available.
2. Non-alcoholics may become better informed about the differences between social drinking, drunkenness, and the illness of alcoholism.

B. The integration of factual alcohol education within the formal school system so that:

1. Alcoholism may be prevented in youth before it can be established and decisions by teenagers to drink or not to drink can be based on factual information.
2. Teachers selected to teach alcohol education can henceforth be motivated factually rather than by traditional misconception and prejudice.

C. The acceptance and utilization of modern medical techniques in the treatment of acute alcoholism post-alcoholic state and chronic alcoholism so that:

1. The medical and allied professions can contribute more substantially toward the solution of this problem.
2. More general hospitals and nursing homes will accept alcoholics as legitimate patients suffer-

ing from an illness in the same manner as any other illness.

3. Out-patient clinics may be established for diagnosis, consultation, medical attention and psychiatric treatment, when indicated.

D. The adoption of "pastoral counseling" by members of the clergy, based on the premise that alcoholism is an illness of the total man.

Its program calls for continued co-operation with the Maine Medical Association working through its subcommittee on alcoholism with other groups and with other state departments such as the State Department of Education. It emphasizes the desirability and practical savings to be obtained in tax money by the rehabilitation of certain recipient groups in both state and local welfare programs.

In its outline for program development during the coming biennium the Division emphasizes the need for a close working relationship with all groups of Alcoholics Anonymous which are active in the State and refers to Alcoholics Anonymous as "the greatest single resource for maintenance therapy for the alcoholic."

It is felt that the continued training of a number of key persons in the state who are adequately prepared to introduce and utilize alcohol education within their various vocations is of paramount importance. It is for that reason that the Division is sponsoring the persons previously referred to, who attended the Yale School of Alcohol Studies this summer through fellowship grants arranged for by the Division. It is, of course, planned to maintain and expand, in so far as possible, the present library of factual literature, films and other materials for both lay and professional groups so that the most up-to-date and effective information on alcohol education for both adult and for school use may be made continually available to those who require it.

Of especial interest in the program planning for the next biennium is a determination of the extent of requests from physicians for films on alcoholism, literature and exhibits. It is planned also to survey the medical profession in an attempt to determine the number of meetings devoted to subjects concerning treatment for the alcoholic as well as for other evidences of expanded professional interest.

Maine's Director of Alcoholic Rehabilitation, Max P. Good, was a participant the latter part of June in a work shop on the subject of "Alcoholism and Community Action," which was sponsored by the National Council on Alcoholism in conjunction with Teacher's College, Columbia University.

John Hutchinson, Ph.D., Professor of Education of Teacher's College, was the work shop director with Denis McGenty, M.A., Executive director of the New York City Alcoholism Information Center, as Associate director.

The staff included among others Mrs. Marty Mann,

Continued on page 306

Maine Medical Association

ANNUAL REPORTS 1956-57*

Report Of Legislative Committee — 1957 Legislature

Mr. Chairman and Gentlemen of the House of Delegates. I regret that this report could not have been in the June Journal, but the Maine Legislature did not adjourn in time to prepare it for publication. Time is of the essence, and I am going to run through a final accounting of Legislative action, and I shall have just a few brief comments, in mentioning the bills that were killed.

Bills Killed

L. D. 1267 — Choice of Physician Under Workmens Compensation Law

This bill would allow an injured employee to make a choice of a list of three doctors submitted by the employer. A labor-sponsored bill which had merit for in many instances industries provide medical service through friendship rather than supplying a doctor who is able to handle traumatic injuries. An example has been given of an obstetrician being the factory doctor.

L. D. 318 — Costs of Witnesses Fees Under Workmens Compensation Law

Another labor sponsored bill allowing a petitioner before the Industrial Accident Commission to recover from the insurance company his expenses in having doctors and other witnesses present at the hearing.

L. D. 1061 — Medical Service Under Workmens Compensation

This bill would allow Christian Science Healers to recover for their services under Workmens Compensation Law. We had to oppose this strongly for if this went through there would be no reason why chiropractors and everyone else would not qualify.

L. D. 1303 — Registration of Nurses

This bill would take control out of the hands of the nurses. It is strongly argued that the small hospitals will be in serious difficulty if they do not have help and these hospitals want someone who can do the job rather than having a super trained junior mechanic. The nurses felt that the standards would be lowered and it is perhaps true. However something will have to be done as the nurses training schools have gone down from 34 to 5. It is well argued that the Nurses Groups in New York and Chicago control the standards in Maine (and everywhere else) and that there will have to be training programs in hospitals with an admitted lower standard of training.

This bill was not going through and its sponsors wanted the matter referred to the Legislative Research Committee for study between now and the next session. This was killed also. However your Legislative Committee strongly recommends that this association has a committee to study the question for in two years we will have to take a stand.

L. D. 303 — Absentee Voting

This bill would allow a hospital superintendent, attending registered nurse or a municipal health officer to certify that a person through illness was not able to get to the polls.

L. D. 1091 — Charges for Patients at State Sanitariums

State assuming responsibility for all charges on patients in T. B. Sanitariums.

L. D. 1211 — Commitment of Persons with Contagious Tuberculosis

Superior Court would have jurisdiction and after proper hearing would be committed.

L. D. 1261 — Creating Hospital Lien Law

This bill comes up from time to time. It would allow hospitals to have a lien on any claim a patient may have to recover for his hospital services. For example if a person was injured through the negligent actions of an automobile driver, the hospital would have a lien on any payment the insurance company might pay the patient.

L. D. 1262 — Providing for Nursing Education

This would allow the Board of Education to accept Federal Funds that would be available for nursing education and to expend these funds in accordance with Federal Regulations.

L. D. 1088 — Age of Admissions to State Hospitals

Would lower age bracket from 12 to 8 in certain situations.

L. D. 1322 — Benefits on Lives of Children Under Foreign Beneficiary Law

L. D. 1323 — Qualifications For Membership in Foreign Beneficiary Law

L. D. 1324 — Funds of Foreign Beneficiary Associations

Fraternal Benefit Groups for children under twenty are providing for disability benefits, hospital medical and nursing expenses before age 65.

L. D. 891 — Physicians Employed by Municipalities

Physicians are now *subsidized* by towns and word was changed to employ in order that the doctors may acquire social security benefits. There was great concern as to the full meaning and result of the word employment and as there was an attempt to revise the laws pertaining to towns the sponsor asked that his bill be indefinitely postponed.

Some of the doctors who would be affected protested against the passage of the bill for they felt that their right to bill patients over and above what the towns would pay would be affected.

Bills Passed

L. D. 196 — Registration of Podiatrists

Podiatrists who qualify with certain standards of training are authorized to use opiates in an unlimited manner. The determination as to who does have this right is in the hands of the Medical Board of Registration.

The Council of the Maine Medical Association gave its approval before the bill was introduced.

L. D. 217 — Medical Examiners of Penobscot County

L. D. 1200 — Medical Examiners of Cumberland County

Counties allowed one additional examiner each with no definition as to the locality from which he will be appointed.

The support we had from the Medical-Legal Society in opposing these bills fell apart and with the combined legislative groups from both Cumberland and Penobscot Counties being in favor of something we were fortunate to salvage what we did.

*Presented at The Annual Session of the House of Delegates of The Maine Medical Association, June 23, 1957.

L. D. 694 — Tri-State Compact, Maine, New Hampshire, and Vermont to establish Tri-State Medical Needs Board

A bill our association sponsored to give recognition to a board already in existence in order that it may have an official status so that it would be in a better position to receive funds.

L. D. 830 — Funds for Mental and Dental Education for New England Board of Higher Education

Dr. Hawkes Bill originally asked for \$20,000 for years 1958 and 1959 set up in fund to be given to New England Medical and Dental Schools on a formula of so much per student from the State. Bill passed with amendment changing total sum to \$20,000 for both years.

L. D. 340 — Interstate Compact on Mental Health

Institution bill setting up group of states and anyone in one of these participating states may receive treatment for mental illness irrespective of where he comes from.

L. D. 65 — Moneys to Obtain Plasma

This law already on books but changed so that unexpended balances shall not lapse but shall remain a carrying account.

L. D. 1134 — Research of Cystic Fibrosis

Bill authorizes sum of \$20,000 for two year study.

L. D. 282 — Reactivate Committee on Problem of Mentally Retarded

Committee in existence given official recognition.

L. D. 344 — Amending Associated Hospital Service of Maine

Allows additional plans and allows Association to act as principal or agent of other service, corporations or insurance companies.

L. D. 1379 — Fluoridation of Public Water Supplies

Towns may vote on question and if 80% authorize it the utility may put fluoride in public water supply. Once town has voted approval it may not vote on issue for period of three years.

Now, in closing, I should like to thank my committee members for their excellent and diligent assistance. Also, I want to thank Mr. Robert O'Connor, our legislative representative, for his very fine work, and most of all I want to point out that the success of this legislative session has been nothing that I have had anything to do with; the ground work was all laid by my predecessor, Tieche Shelton. For years, he had worked as Chairman of your Legislative Committee, and it was his suggestion that we secure the services of a qualified legislative representative, and it is because of this, and because of the foresight of Dr. Shelton that the work of this committee has been so successful.

Respectfully submitted,

WILSON H. MCWETHY, M.D., *Chairman*

Annual Report of the Woman's Auxiliary to the Maine Medical Association

It might be of interest at this time to review the scope and objectives of the National Auxiliary to the American Medical Association as well as the Auxiliary to the Maine Medical Association.

The National Auxiliary has seventy-seven thousand members from every state in the Union and Hawaii. The Maine Auxiliary this year has 391 members with ten organized counties. We hope another county and district will be organized by next fall. Each county medical society sponsors its auxiliary and provides an advisor to promote cooperation between the county medical society and the auxiliary.

OBJECTIVES

The objectives of the Maine Auxiliary are:

1st: To assist the Maine Medical Association in its program for the advancement of medicine and public health.

2nd: To cultivate friendly relations and promote mutual understanding among physician's families.

The work of the organization is carried on by its several committees.

COMMITTEES

The public relations committee has worked with all county chairman in promoting community welfare. Three of the counties have sponsored baby sitting courses.

This year there has been a definite interest in Civil Defense and many of our members have served on Civil Defense Committees. Many members have served on Health committees such as Polio, Cancer, and Health drives. One auxiliary has sponsored a community Health Fair. There have been health booths at two fairs.

Home and Highway safety programs have been studied by most counties and auxiliaries. Various projects such as teas, rummage sales, pot luck suppers, bridge parties and food sales have brought the auxiliary members closer in their efforts to raise money for nursing and medical scholarships. One county this year gave three medical scholarships of \$200.00 each. A total of \$2,400.00 has been given in the past five years. A total of ten nursing scholarships have been given this year. There have been lectures on Mental Health, Safety, Civil Defense, Legislation, Public Relations, Rehabilitation of the Handicapped and Civil Defense Ground Observer Corps.

Most of the counties have contributed to the American Medical Education Foundation which this year amounts to \$294.00.

Legislation and Health Council Chairmen have attended most meetings at the State Capital in conjunction with their respective committees. They have been most helpful in presenting this information to each county.

We are honored this year by having as our guest Mrs. Paul C. Craig, National President of the Woman's Auxiliary to the American Medical Association. Also State Presidents of New Hampshire, Connecticut and Rhode Island.

At this time I wish to express my appreciation for the cooperation given the auxiliary by the Maine Medical Association for this year's appropriation and printing of the Informer which is the Auxiliary paper. The personnel in the office of the Maine Medical Association have been most helpful.

HELEN F. GOODWIN

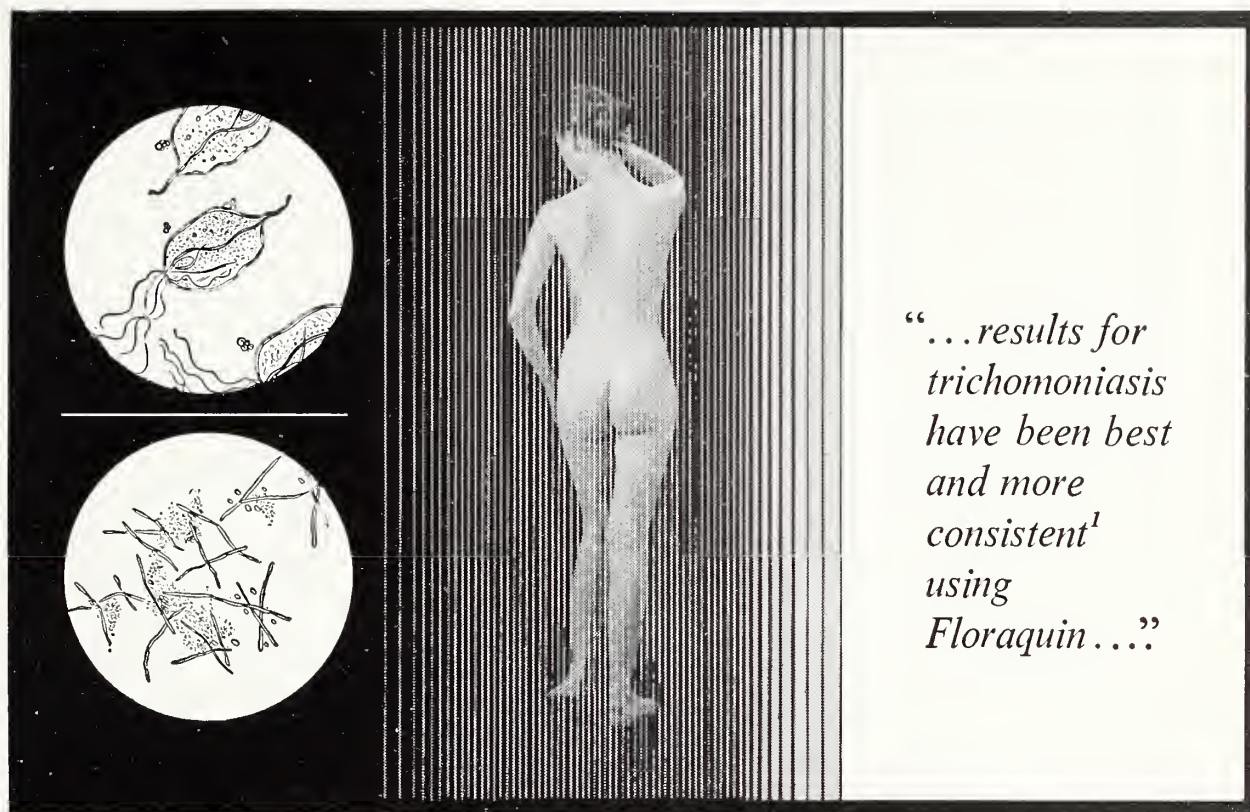
President, Woman's Auxiliary
to the Maine Medical Association

Tuberculosis Abstract

Paper electrophoresis of serum from 327 patients with pulmonary tuberculosis showed falling albumin concentration and rising α_2 globulin concentration with increasing activity and extent of the disease. These returned to normal with improvement of the disease. This was a more sensitive index of activity of tuberculosis than the blood sedimentation rate.

Reference: Gilliland, I. C. et al. Brit. Med. J. 1956, 4981 (1460-1464)

EFFECTIVE, DEPENDABLE THERAPY FOR VAGINITIS



"...results for trichomoniasis have been best and more consistent¹ using Floraquin..."

Floraquin[®] eliminates trichomonal and mycotic infection; restores normal vaginal acidity

Leukorrhea is by far the most frequent symptom of vaginitis; trichomonads and monilia are the most common causes. Many authors have reported² trichomonal protozoa in the vagina of 25 per cent of obstetric and gynecologic patients. Increased use of broad spectrum antibiotics has resulted in a sharp rise in the incidence of monilial infections.

Floraquin effectively eradicates both trichomonal and monilial vaginal infections through the action of its Diodoquin[®] content. Floraquin also furnishes boric acid and sugar to restore the normal vaginal acidity which inhibits patho-

gens and favors the growth of protective Döderlein bacilli.

Pitt¹ recommends vaginal insufflation of Floraquin powder daily for three to five days, followed by acid douches and the daily insertion of Floraquin vaginal tablets throughout one or two menstrual cycles. G. D. Searle & Co., Chicago 80, Illinois. Research in the Service of Medicine.

1. Pitt, M. B.: Leukorrhea. Causes and Management, J. M. A. Alabama 25:182 (Feb.) 1956.

2. Parker, R. T.; Jones, C. P., and Thomas, W. L.: Pruritus Vulvae, North Carolina M. J. 16:570 (Dec.) 1955.

SEARLE

Necrology

FRANKLIN A. FERGUSON, M.D.

1876-1957

Franklin A. Ferguson, M.D., 80, of Portland, died March 23, 1957.

Dr. Ferguson was born in Boston, Massachusetts, April 2, 1876, son of Franklin T. and Mary H. Ferguson. He attended Boston public schools and graduated from the college and school of medicine of Boston University. He did postgraduate work at Harvard University School of Medicine and served his internship at Massachusetts Home Hospital and Trull Hospital, Biddeford. He was on the medical service of the Eye and Ear Infirmary in Portland and on the surgical service at Bath City Hospital before beginning his practice in Portland in 1909.

A member of the Maine Medical Association and the Cumberland County Medical Society, Dr. Ferguson received a medal

at the annual session of the State Association in 1952 in recognition of fifty years in the practice of medicine.

He was a former president of Boston University's General Alumni Association and a former trustee. He was president emeritus of the board of trustees of Portland Junior College and a member of the original board. He was active in the Portland Rotary Club and a member of the Dunlap Lodge of Masons at Biddeford.

Surviving are a son, Franklin F. Ferguson, M.D., associate pathologist at the Maine Medical Center; three daughters, Miss Priscilla Ferguson, Miss Eleanor Hewitt Ferguson, of Boston and Mrs. John B. Titherington, of Falmouth; a sister, Mrs. William L. Hopkins, of Chicopee Falls, Massachusetts; and six grandchildren.

News and Notes

Bingham Associates Director Receives Award

George W. Dana, M.D., of Wellesley Hills, Massachusetts, Medical Staff Director of Boston's New England Center Hospital, and Medical Director of the Bingham Associates Program for postgraduate medical education in the New England area, was named on June 3 as the first recipient of the Medical Achievement Travel Award, presented by The Purdue Frederick Company of New York, an ethical pharmaceuticals firm.



Announcement of the award "for his distinguished contributions to post-graduate medical education" was made at a reception held at the Barbizon Plaza Hotel in New York City.

In announcing the award, Benjamin Schneider, President of the Purdue Frederick Company, said, "... The highlight of Dr. Dana's projected trip abroad will be a series of visits to medical meetings, seminars, teaching centers, hospitals and research facilities in England, France, Italy and Sweden."

Maine Heart Association Officers Elected

Ralf Martin, M.D., of Portland, was elected president of the Maine Heart Association at the annual meeting at Rockland in June. Dr. Martin was the Association's first president when it was organized in 1949.

H. Draper Warren, M.D., of Caribou, is first vice-president; Edward A. Greco, M.D., Portland, second vice-president and Wilson H. McWethy, M.D., Augusta, retiring president, is chairman of the Board of Directors.

American College of Chest Physicians

William L. MacVane, Jr., M.D., of Portland, received his certificate of Fellowship in the College at the Convocation in New York on June 1. Edward A. Greco, M.D., Portland, is serving as Regent of the College, and George E. Young, M.D., Skowhegan, as Governor.

A.M.A. Announces Two Changes in Administrative Setup

The American Medical Association has announced two important changes in its administrative setup.

The Board of Trustees elevated George F. Lull, M.D., of Chicago, who has been secretary-general manager of the Association for 11 years, to the newly-created position of assistant to the president of the A.M.A. He will continue serving as secretary, which is an elective office.

At the same time, the Board announced the appointment of F. J. L. Blasingame, M.D., of Wharton, Texas, to the position of general manager of the American Medical Association. He will take over his new duties on January 1, 1958.

In his new job, Dr. Lull will relieve the president of the Association of many of the burdens of this office, which have become especially heavy in the last few years.

Edwin S. Hamilton, M.D., chairman of the A.M.A. Board of Trustees, said that "Dr. Lull will serve as spokesman, troubleshooter, listening post, information center and as an ambassador of the medical profession in cities and towns throughout the country. His experience is invaluable, and it will be applied in solving medical problems at the state and local level, as well as nationally."

Dr. Lull, who is 70, joined the A.M.A. staff after serving 34 years in the Army. He entered the Army in 1912 as first lieutenant, emerging as major general of the Army Medical Corps. His last position before retirement was deputy surgeon general of the Army.

Dr. Lull received many honors in connection with his Army service during both World Wars, including the Distinguished Service Medal. In 1951, the Cuban government gave him its highest honor — the Order of Carlos Findlay — for his humanitarian work in the field of medicine.

Change of Address

Adam P. Leighton, M.D., secretary of the State of Maine Board of Registration of Medicine, has announced that the new address of this office is: 142 High Street, Room 514, Portland, Maine.

A Correction

At the Annual Meeting of the Medico-Legal Society, I announced that the Medical Examiner fee of \$15.00 for a view without autopsy, had been raised to \$25.00 by the Legislature. I made this announcement on what I considered excellent authority. It now appears that my information was wrong and that the bill was not passed, so the fee remains as before at \$15.00. I am sorry to have given out wrong information.
GEORGE L. PRATT, M.D.
Secretary, Maine Medico-Legal Society

Announcements

Clinical Congress of the American College of Surgeons

Progress in surgery as it is emerging from research laboratories and operating rooms is the theme of the forty-third annual Clinical Congress of the American College of Surgeons, meeting in Atlantic City, New Jersey, October 14 through 18, 1957. The Congress program will include postgraduate courses, discussions in general surgery and the surgical specialties, motion pictures, cine clinics, color television from Johns Hopkins Hospital in Baltimore, research reports, and scientific and technical exhibits. Continuing the student participation program launched last year, medical students from thirty-six medical schools have been invited to attend the Congress as College guests. The student program was initiated as an educational contribution of the College by action of the Board of Regents. Students are selected by vote of their classmates, and medical colleges sending representatives to the Congress are rotated each year. This year, thirty-five young men and one young woman will come from Chicago, eastern United States, Canada, and Puerto Rico. For further information write: American College of Surgeons, 40 East Erie Street, Chicago 11, Illinois.

The Academy of Psychosomatic Medicine

The program of the fourth annual meeting of The Academy of Psychosomatic Medicine to be held October 17-19, 1957, at the Morrison Hotel in Chicago will be devoted to "Psychosomatic Aspects of Obstetrics, Gynecology, Endocrinology and Diseases of Metabolism." The meeting will be open to all scientific disciplines, as well as psychologists, social workers and nurses. Information may be obtained from Dr. William S. Kroger, Secretary, 104 South Michigan Avenue, Chicago 3, Illinois.

International College of Surgeons Congress

Surgical problems of the eye, ear, nose and throat will be covered in a three-day specialty program, September 9-11, which will be a feature of the 22nd annual Congress of the United States and Canadian Sections, International College of Surgeons, in the Palmer House, Chicago, September 8-12. The section on Plastic and Reconstructive Surgery will meet jointly with the General Assembly on the afternoon of September 9. Papers also will be presented before section meetings on the afternoons of September 10 and 11. The scientific program of the Congress will cover all phases

of surgery.* The speakers will include world-renowned surgeons from four other continents as well as from the United States, Canada and Mexico. For additional information write: Dr. Ross T. McIntire, executive director of the International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Illinois.

*Besides the General Assembly, there will be the following section programs: Coloproctologic surgery, neurosurgery, obstetrics-gynecology, occupational surgery, ophthalmology-otolaryngology, orthopedic surgery, plastic and reconstructive surgery, urologic surgery, surgical nurses and inhalation therapists.

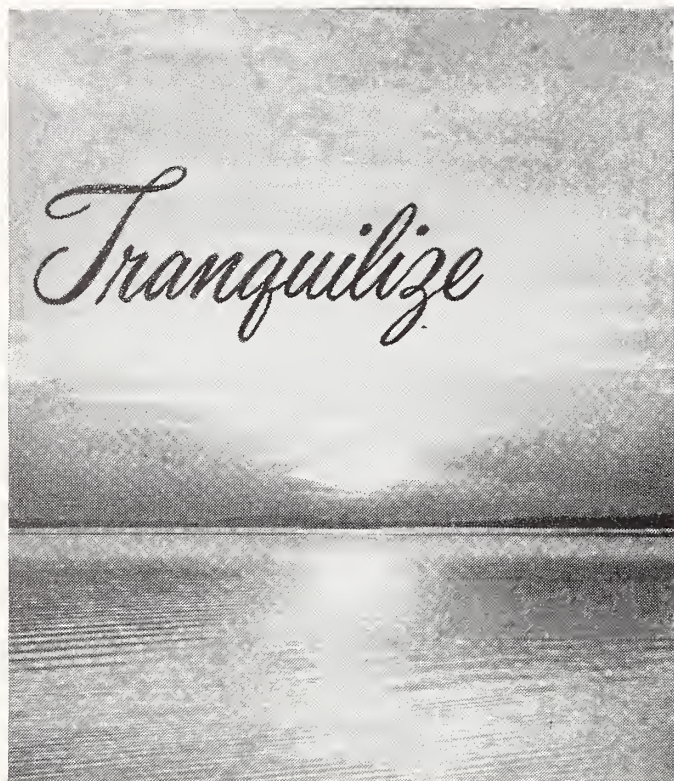
Postgraduate Courses on Diseases of the Chest

The Council on Postgraduate Medical Education of the American College of Chest Physicians will present the following Postgraduate Courses on Diseases of the Chest this fall:
12th Annual Postgraduate Course
Hotel Knickerbocker, Chicago, Illinois
October 21-25
10th Annual Postgraduate Course
Park-Sheraton Hotel, New York City
November 11-15
3rd Annual Postgraduate Course
Ambassador Hotel, Los Angeles, California
December 9-13
Tuition for each course is \$75. The most recent advances in the diagnosis and treatment of chest diseases — medical and surgical — will be presented. Further information may be obtained by writing to the Executive Director, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

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Sept. 4	Anatomical and Physiological Base of Mental Retardation	10:45 A.M.
Sept. 5	Clinico-Pathological Conference and August Death Review, Microscopic Demonstration	11:00 A.M.
Sept. 11	Drug Therapy	10:45 A.M.
Sept. 18	Tranquilizers	10:45 A.M.
Sept. 25	Familial Oligophrenia (Open to the medical profession)	10:45 A.M.



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New England Rheumatism Society Meeting

William Clark, M.D., of Cleveland, Ohio will give a paper entitled, "The New Horizons in Rheumatic Disease," at the meeting of the New England Rheumatism Society at the Bethel Inn, Bethel, Maine, October 4th at 4 P.M.

A social hour will follow at 5:30 and dinner at 7 P.M. The after-dinner speaker will be a Maine humorist. Doctors are urged to bring their wives and make reservations directly with the Bethel Inn well in advance.

Industrial Safety Course

Colby College, Waterville, will offer a course in Industrial Safety, August 26-31, 1957.

An outstanding faculty in the field of industrial safety will conduct the program. A brochure outlining the course, listing the teaching staff, and supplying other necessary information is available upon request. Fee for the course is \$75 and covers all charges, including living quarters and meals.

Sponsoring Organizations: Associated Industries of Maine, Maine Association of Insurance Agents, Maine Department of Economic Development, Maine Department of Labor and Industry, Maine Federated Labor Council, AFL-CIO, Maine Medical Association, Maine Members, American Pulp and Paper Association, Maine State Chamber of Commerce, New England Shoe and Leather Association.

THE PSYCHOGALVANIC REFLEX

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DEPARTMENT OF HEALTH AND WELFARE

Continued from page 299

who is executive director of the National Council on Alcoholism. Resource consultants for the two-week work shop included W. Kenneth Clark, M.D., acting medical and scientific director of The American Cancer Society, Ruth Fox, M.D., president of the New York City Medical Society on Alcoholism and a vice-president of the National Council on Alcoholism, E. M. Jellinek, Sc.D., of the International Institute for Research on problems of alcohol, Geneva, Switzerland, John L. Norris, M.D., medical director, Eastman Kodak Company and Robert Dawson, Ph.D., manager of personnel, Research and Planning Division Equitable Life Assurance Society of the United States, and Sloan Wayland, Ph.D., professor of education, Teacher's College, Columbia University.

Mr. Good was the only State program director invited to serve as a participant at the work shop.

Officers of the Maine Medical Association 1957-1958

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President-elect, EUGENE E. O'DONNELL, M.D., Portland

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The Journal of the Maine Medical Association

Volume Forty-Eight

Brunswick, Maine, September, 1957

Number 9

The Concept Of Diminishing Levels An Adjunct To The Management Of Incurable Cancer

J. M. JACKLER, M.D.*

Caring for a patient who is undergoing a relentlessly progressive downhill course is an arduous task. The satisfaction that comes from healing is denied to the physician when the outcome of a case is predictable and inevitable. The purpose of this paper is to outline a concept to aid in the management of such a situation, namely incurable cancer.

The concept of diminishing levels is not an original idea of this author. It was culled from many discussions with his colleagues, patients, and patients' families. It is quite probable that this concept has been formulated, discussed and employed by other physicians and has been published in medical journals which I have not read.

Briefly stated, the concept of diminishing levels has as its basis the attempt to maintain a certain level of performance from the patient, and the lowering of this level as the incurable disease progresses. Arbitrarily, I have divided the course into three broad levels.

The first level is the attempt to maintain the patient at an active or semi-active life, free of excessive discomfort, without frequent usage of "pain killing" medications. This stage is where the patient attempts to hide his illness and be "like everybody else." As the disease progresses, the second level is reached when the patient is maintained at a semi-active life, with some discomfort and with the use of medication. At this stage, the patient realizes he is not well, but he is concerned with his ability to have "some sort of life, even if I have to take drugs." The third level occurs when the patient is no longer concerned with activity, his main concern is to be free of pain, whatever drugs are required. It is at this point that the patient acknowledges the limitation forced upon him by his illness, and desires to be free of the unpleasantness of his disease. "As long as I am comfortable I don't give a darn."

When analyzed, this concept is based upon two factors — physical activity and pain. The purpose of this scheme is to attempt to define the level the patient should be oriented toward and when to lower the level.

*Sisters Hospital, Waterville, Maine.

To employ bed and chair activity with frequent use of morphine to a patient who is in Level I is to depress a potential initiative which may lead to months of useful activity. The attempt to stimulate excessive activity from a patient in Level III will result only in resentment and frustration for the physician, patient, and patient's family. Oftentimes, however, it is the patient and not the doctor who encourages the shifting of levels.

The following two cases, (1) carcinoma of the bowel with peritoneal metastases and a colostomy, and (2) carcinoma of the breast with bone, brain, and liver metastases, illustrate the conscious use of diminishing levels in the management of incurable cancer.

Case I. An elderly woman was first seen with an intestinal obstruction following three months' history of increasing constipation. During hospitalization it was determined that she had carcinoma of the sigmoid colon with peritoneal metastases, and a colostomy was performed. Following discharge from the hospital, she convalesced at home, receiving trained nursing care. The only drugs given were a barbiturate at bedtime and one course of antibiotic therapy for a urinary tract infection. At the end of four weeks, she was ambulatory, was climbing stairs and did not require any medication. At six weeks, she took daily walks; at eight weeks she was shopping and driving her car, but she still required a housekeeper and a nurse. Her major complaints centered on the colostomy and she was urged to join the Kolostomy Klub (a group of patients who have colostomies and have organized a club for dissemination of information on colostomies). The fact that there was a Kolostomy Klub minimized the traumatic effect of "being different." Although there was much discussion about this group she never made an attempt to join it. She was content just to know that such a group existed. This is the first level, and it lasted for four months.

The second level was established by the patient following an episode of electrolyte imbalance secondary to diarrhea and excessive cleaning of the colostomy. Parenteral therapy was given at home (with nurses present), but even though the fluid and electrolyte imbalance was corrected, the patient could not be encouraged beyond walking in her room. Metastases to the liver was now discernible, and the colostomy did not function as smoothly as before. Discussion centered around the colostomy and the Kolostomy Klub, and activities within the room. Although attempts to encourage the use of numbered painting kits were unsuccessful, the patient was content with this level of performance.

The third level was reached one month later when the patient sustained a transient episode of confusion (? thrombosis or metastases) which left no neurological signs or residua. She was now bed-confined, narcotics in small doses were used one to three times per day to control abdominal discomfort and she made plans to settle her family affairs. About one week later, she stated, "You knew that I knew all the time, didn't you?" The patient, who was an extremely perceptive

woman, had never inquired as to the diagnosis and prognosis of her condition. I had taken this cue to mean that she knew the diagnosis and prognosis but did not wish to actually hear it verbalized. She expired three days later.

Case II. The second case was first seen five years after a radical mastectomy. In the intervening years she had received X-ray therapy for recurring localized lymphadenopathy and, as a complication, developed radiation fibrosis of the left lung. When first seen she had metastases to the sternum and the left hip which were causing pain to the point that the patient had limited herself to the second level of activity. She was extremely upset because she suspected her symptoms were due to cancer. Because of the emotional status, the pains were attributed to muscular changes which were to be expected after surgery. By employing reassurance therapy, mild physiotherapy, and aspirin, the pain and limitation of movement of the left hip was diminished to the point where the patient was ambulatory and made visits to other people. Tranquilizing drugs were not used. The patient progressed from the second level to the first level and was content.

Approximately five months later, she became mentally confused and developed a left hemiparesis. Spinal fluid studies were consistent with a diagnosis of brain metastases. Hormone therapy was started and, much to the surprise of the physician and the family, within two weeks there was no neurological residua. Hormone therapy was continued, but the patient could not be encouraged to leave the house. Small doses of narcotics were used to minimize the bone pain. The patient remained at this level, the second level, for approximately five weeks.

The third level was reached when ascites accumulated. The liver from this point on became progressively enlarged and nodular and generalized anasarca ensued. Following a discussion with the family, it was decided to treat the patient at home. Efforts were directed toward encouraging food intake, and small doses of Demerol® were used to control the discomfort from the enlarging liver. Reassuring the patient that her heart was fine (she was frightened that she had "heart disease and dropsy") and that the trouble was with the liver, was more than acceptable to the patient. At each visit she recalled some friend or relative who had liver disease and who "was all cured." These comments were countered with non-committal remarks which inferred encouragement but made no promises. The patient was notified that at some future date she might have to be hospitalized for a few days. The ascites was minimized and made less frightening by calling it "her baby." The patient was jokingly chastised for "becoming pregnant at her age" (late fifties). Complaints about abdominal pain and nausea were cheerfully explained as being expected during a pregnancy, with occasional serious remarks that these symptoms were expected with liver disease. Some symptoms were con-

rolled by the use of vitamin pills for one to two weeks, and if the symptoms recurred, a different colored vitamin pill was used, which again was temporarily effective. The patient was bedridden except for bathroom privileges. (The battle of the bedpan is often more exhausting than the walk to a pan placed on a chair).

This third level of activity was maintained for three months. The patient gradually became lethargic and icteric and hepatic coma appeared imminent. She readily agreed to hospitalization and expired quietly thirty-six hours after admission.

The above cases were chosen because they represent two common problems in terminal cancer care, the

colostomy and bone pain. Neither patient discussed in this paper was informed as to the nature of the disease. This is not to be inferred as a recommendation for such action. In these two cases the situation was best handled by avoiding the subject. Often when the patient knows the diagnosis, the clinical management is easier for all parties involved. The decision whether to tell the patient he has cancer depends on the physician and his understanding of the patient and the patient's family.

Conclusion: The concepts of diminishing levels, based upon levels of pain and activity, can be of value in the management of incurable cancer.

14 Gilman Street, Waterville, Maine.

Retrograde Jeuno — Gastric Intussusception

A Case Report

ALBERT A. POULIN, M.D.* AND JOSEPH A. MARSHALL, M.D.**

Retrograde jejuno-gastric intussusception is a rare complication of gastro-enterostomy. There has been a relative decrease of gastro-enterostomies in favor of partial gastrectomy in recent years. However, some reports of similar intussusception complicating subtotal gastrectomy have been received.

The intussusception may be acute and present a surgical emergency rarely with any radiological investigation. The chronic cases are often intermittent and give vague clinical symptoms of anorexia, vomiting, and gastric distress.

Ledoux-Lebard in 1933 showed the roentgen appearance of this abnormality. There is a typical pattern of kinking folds of small intestine seen within the lumen of the stomach. There is a variable circular filling defect marked by these striae. (*Figures 1 & 2*) These are usually widely spaced at the periphery but closed and irregular at the center which is the site of the jejunal lumen. This is the situation when either afferent or efferent loops are involved. Occasionally, as found by Shackman, both loops may be present in the intussusception and give a typical double filling defect.

CASE HISTORY

A middle-aged white female was admitted to the hospital with a chief complaint of abdominal pain.

The pain occurred after eating and had persisted during the last five to ten years. She had had a posterior gastro-enterostomy performed twenty years earlier for a peptic ulcer. Some time after the operation she noted epigastric distress immediately after eating, which was worse during periods of stress. She also experienced bouts of palpitations, nausea and vomiting. She was unable to maintain her weight above 105-110 pounds.

A gastro-intestinal series performed one year previous to this admission was reported as showing herniation of gastric mucosa through the anastomosis or possibly a leiomyoma and she was referred to another hospital. The diagnosis was not confirmed and she was discharged home on dry feedings, tincture of belladonna and phenobarbital. She had relief for six to eight months. Then her symptoms recurred and worsened.

Physical examination revealed a well-developed, thin, white female in no acute distress. Abdominal palpation revealed tenderness of the right upper quadrant with voluntary muscle spasm. The liver, spleen and kidneys were not palpable; no other masses felt. Peristalsis was active. Rectal and pelvic examinations were negative. Hemoglobin was 68% (10.2 grams); R.B.C. - 3.6 million; W.B.C. - 5,400 with normal differential count. Urinalysis - normal; N.P.N. - 28; total protein - 6.3 with AG ratio of 3.4/2.9; prothrombin time - 18 seconds. Two stool specimens showed 3+ guaiac.

Cholecystograms showed a normal functioning gall bladder with no evidence of stones.

* Radiologist, Sisters Hospital, Waterville, Maine.

** Surgeon, Sisters Hospital, Waterville, Maine.



FIGURE 1.

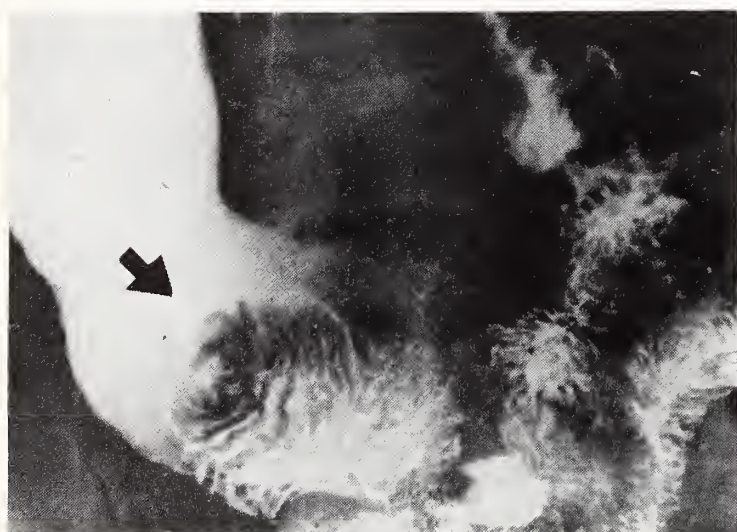


FIGURE 2.

A gastro-intestinal study revealed the barium to outline an esophagus of average caliber without defects. The stomach was normal in position and contour in its upper two-thirds. There was a well-functioning posterior gastro-enterostomy. The distal portion of the stomach did not fill well although some barium could be passed into the pylorus. This was somewhat narrowed and scarred but comparison with previous films showed no real change in the caliber of this area. However, during fluoroscopy, with the patient lying on her back, the functioning small bowel at the level of the stoma appeared to be unusual in that an intraluminal defect could be seen within the body of the stomach. Comparison with films taken in 1955 and 1956 showed a similar appearance and it was believed that there

was intussusception or herniation of the proximal jejunum into the stomach.

She was prepared for surgery and at operation the posterior gastro-enterostomy was easily identified. The anastomosis was of large size and prolapse of jejunal tissue through it into the stomach was palpated and identified by gastrostomy and visual inspection. A subtotal gastric resection (Polya type) and jejuno-jejunostomy was performed. Her post-operative course was complicated by an incisional wound infection and occasional bouts of nausea and vomiting. A barium swallow on the ninth post-operative day revealed a poorly functioning stoma. She was given Compazine®-5 mgm. after meals with excellent results and was discharged on the 24th post-operative day entirely asymptomatic.

She has been seen several times since discharge and has not had any further nausea, vomiting, pain or diarrhea. Her weight has stabilized thus far at 110 pounds.

DISCUSSION

This case is presented as an interesting and rare complication of gastro-enterostomy. In this case the condition appears to have been present for several years and although many radiographic studies were made by various examiners, it was never recognized.

This condition should be seen less often. Subtotal gastrectomy now appears to be the procedure of choice; however, several cases have appeared in the literature, notably those of McNamara and Palmer. The reason for the occurrence of retrograde intussusception is not known. Transstomal progressions or regressions have been reported in only approximately 125 cases, including those following gastrectomy and gastro-enterostomy.

SUMMARY

A case of chronic retrograde jejuno-gastric intussusception in a middle-aged woman following a gastro-enterostomy is presented. This case was confirmed by surgery and treated by subtotal gastrectomy with excellent results. The diagnostic criteria and literature of this condition have been reviewed.

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Dr. Marshall, 177 Main Street, Waterville, Maine.

Dr. Poulin, Sisters Hospital, Waterville, Maine.

Cardiac Patients And Surgery

PAUL H. PFEIFFER, M.D.*

There are several facets of the pre-operative evaluation of the cardiac patient which are best shown with illustrative cases. Following this, therapy for most of the cardiac conditions which complicate surgery will be discussed.

To begin with it is the duty of the cardiologist to indicate that the prognosis of the heart disease is so gloomy that the contemplated surgical procedure is not justified. In other words the decision not to operate on an obviously malignant but asymptomatic mass in the breast of a 70-year-old woman with arteriosclerotic heart disease, angina on the slightest effort and a large heart with gallop rhythm, appeared reasonable.

In the second place, the cardiologist must be able to reassure the hesitant surgeon and anesthesiologist. He must be able to realize when proper therapy can turn a poor risk patient into one capable of withstanding and, presumably, benefiting from a surgical procedure.

A 66-year-old man was seen because of prostatic obstruction. He had rheumatic heart disease with a large heart and auricular fibrillation. He had recently been in congestive failure. A year before he had had a cerebral accident which had left him with a partial aphasia and hemiplegia. He also had chronic pulmonary fibrosis with generalized coarse wheezes and a thick, purulent sputum. The surgeon had decided not to operate. However, the patient responded so well to digitalis, mercurial diuretics, antibiotic and antispasmodic therapy that this decision was reversed. A transurethral resection was successfully performed and the patient was spared the agony and infectious complications of a permanent urethral catheter.

A good cardiologist refrains from using prophylactic medication too enthusiastically. About ten years ago there was great interest in the use of digitalis and quinidine prophylactically before an operation. A 55-year-old woman was being evaluated at that time, in a New York medical center, because of cancer of the breast. She had had asymptomatic hypertension for ten years. Her physician digitalized her over a four-day period; and the night before the operation gave her 2 and then 9 grains of quinidine. Four or five hours later she had a convulsion. An electrocardiogram disclosed a totally chaotic heart action. The patient expired a few hours before the scheduled mastectomy.

The four general categories of heart disease encountered in pre-operative patients are: 1. Congestive

failure. 2. Coronary artery disease (manifested by angina pectoris, coronary insufficiency and myocardial infarction). 3. The arrhythmias. 4. Hypertension. A few miscellaneous types will also be discussed.

CONGESTIVE FAILURE

The diagnosis is usually obvious. Occasionally pulmonary, hepatic or renal disease may mimic some of the features of congestive heart failure. In these instances a therapeutic trial of digitalis or mercurial diuretics can be most helpful. One of the tragedies of medicine is that digitalis (discovered in 1785) is often improperly used or completely neglected by physicians who are eager to study the latest advances of other much less useful drugs. Two examples of this unfortunate lack of therapeutic know-how were seen during the past year.

A 75-year-old female was hospitalized in a state of shock, cyanotic and in marked respiratory distress. She received the last rights; and her family was told by the attending physician that little could be done for her. On examination she was found to be fibrillating at a rate of 180 per minute. The patient responded well to intravenous Cedilanid® and intramuscular mercurial diuretics. She has continued to do well for the past eight months.

A 65-year-old woman was seen because of progressive abdominal swelling and shortness of breath. Examination revealed evidence of rheumatic heart disease with pleural effusion, ascites and peripheral edema. The heart rate was 200 and grossly irregular. The only medication she had been receiving was thyroid! Digitalis and diuretic therapy restored this woman to a useful place in society.

These illustrations, while not applicable specifically to the pre- and post-operative state, point to a shocking ignorance of the use of digitalis. Every physician should familiarize himself with at least two digitalis preparations — one for gradual and one for rapid digitalization. The whole leaf in a dose of 0.1 gram three times a day for five days is a good example of the former; while Cedilanid intravenously in doses of 6 to 8 ml. accomplishes the rapid effect. It is of course imperative that the patient have no previous exposure to digitalis when these doses are used.

Patients with congestive heart failure in the post-operative period should receive packed red cells in preference to whole blood for the treatment of anemia. Intravenous solutions containing sodium should be given slowly with frequent checks for a rising pulse rate or basal rates.

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CORONARY ARTERY DISEASE

Angina pectoris is often readily diagnosed. Not infrequently it is confused with diaphragmatic hernia, orthopedic condition of the neck or left shoulder, various pulmonary diseases and neurotic types of chest pain. A co-operative patient and an intelligently taken history are of paramount importance in arriving at the correct diagnosis. A therapeutic trial of nitroglycerine or Peritrate® may be helpful.

Isolated electrocardiographic findings are sometimes used as a contra-indication to an essential operation. This point of view is not justified. A study done on patients with bundle branch block undergoing major surgical operations demonstrated that they did not have a significantly higher mortality rate than patients of similar age undergoing similar operations whose QRS intervals were normal.⁽¹⁾

In cases of coronary insufficiency or myocardial infarction surgery should be delayed for two or three months whenever possible. However, it has been demonstrated that, handled properly in the operating room, these patients can successfully undergo major operations. One study revealed a mortality of only 4.3 per cent in 257 patients with severe coronary artery disease who had prolonged operations.⁽²⁾ The risk of not operating may be greater to the cardiac patient than the danger of the operation. This applies particularly to the patient with coronary disease subject to recurrent episodes of cholecystitis or bleeding from a peptic ulcer.

When a minor operation or painful procedure is to be done nitroglycerine should be given pre-operatively. Before a major operation it is important to make an attempt to allay the fears of the cardiac patient. In adults, morphine, atropine or scopolamine are used for pre-operative preparation. The choice of an anaesthetic agent is best left to the anaesthesiologist who should use the one he is most familiar with. In general, ether with a high concentration of oxygen is to be preferred. Cyclopropane® introduces the possibility of serious arrhythmias. The hazards of spinal anaesthesia are less since the introduction of vasopressor agents (Neosynephrine®, Levophed® and Aramine®). Pituitrin should be avoided because of its constricting effect on the coronary vessels.

In the post-operative period the patient should be watched closely. An unexplained hypotension or tachycardia may be the first manifestation of a myocardial infarct (or pulmonary infarct). Anemia should be treated, preferably with packed red cells, since it has been shown that the work of the heart is increased when the hemoglobin falls below 8 or 9 grams. All potentially hypotensive agents such as parenteral Thorazine® or Procaine amide® should be used with caution.

THE ARRHYTHMIAS

During the pre-operative period the heart rate should be brought to normal if possible. Sinus tachycardia is usually of non-cardiac origin and may be due to appre-

hension, fever, anemia, pain etc. If uncontrollable, Neostigmin® (1 mgm intramuscularly) may be used.

Rapid auricular tachycardias, fibrillation or flutter are best brought under control with digitalis. Quinidine is potentially too toxic to use in the pre-operative period in an attempt at conversion to normal sinus rhythm. When prompt action is required, Cedilanid intravenously can be repeated every two hours in 2 ml. doses until the heart rate becomes reasonable.

Multiple premature ventricular contractions are frequently of no significance — particularly if they have been present for years in an otherwise well individual. When of recent origin or when arising from more than one focus they are potentially of grave significance as they may be the forerunner of ventricular tachycardia or fibrillation. In this situation, Procaine amide intramuscularly in doses of 500 mgm. two or three times daily may be used. Should the condition demand more urgent action or should one be faced with ventricular tachycardia or fibrillation then Procaine amide may be given intravenously in doses of 100 to 500 mgm. This should be done with caution and frequent electrocardiographic checks.

The minor atrio-ventricular and isolated bundle branch blocks require no specific therapy. Complete atrio-ventricular block with or without Stokes-Adams attacks presents a serious cardiac complication. Digitalis should be used with extreme caution and only because of severe heart failure. Quinidine and Procaine amide are to be avoided entirely. For maintenance therapy ephedrine sulphate orally in doses of 45 mgm. three or four times daily may be tried. If unsuccessful in preventing the attacks, Isuprel® 10 to 20 mgm. sublingually may be given as often as every two to three hours. When this condition is associated with shock Isuprel may be life-saving in a dose of 1 mgm. intravenously diluted in 200 ml. of 5 per cent glucose in distilled water. The rate of infusion depends on the response of the patient.

HYPERTENSIVE DISEASE

A fact which has been known for many years but is still not generally appreciated is that a patient with a blood pressure of 240/90 is in less danger of vascular complications than one with a blood pressure of 160/130. The systolic elevation does not affect the mean blood pressure to the degree that the diastolic does. Systolic hypertension represents a loss of arterial elastic tissue due to the arteriosclerotic process. These patients have a prognosis similar to others in their age group and state of vascular degeneration who lack the systolic elevation. The prognosis of the individual with diastolic hypertension is extremely variable and requires careful evaluation. At one extreme are the relatively young patients with malignant hypertension who rapidly develop progressive cerebral, retinal, coronary and renal vascular disease. Often they are dead within a year in spite of all available forms of therapy. Obviously surgery should not be done on these cases except for very

special indications. At the other extreme are the individuals who have been followed for years with diastolic pressures of 120 or more and who still have well preserved arterioles, hearts of normal size and good renal function. In these cases reassurance and mild psychotherapy or at most phenobarbital or a rauwolfia compound may be all that is required. Spinal anesthesia should be used with close observation in these cases as they may have unusual lability of blood pressure.

When faced with a hypertensive crisis in the pre- or post-operative period, parenteral therapy with a veratrum derivative or one of the purified rauwolfia compounds is indicated. The autonomic ganglion blockaders (hexamethonium, Ansolysen® etc.) should be reserved for extreme cases.

MISCELLANEOUS CONDITIONS

Much has been written about the prophylaxis of subacute bacterial endocarditis. It has not yet been established that any of the recommended antibiotic regimens for patients with rheumatic or congenital heart disease is effective. Many failures of this type of prophylaxis have been reported; therefore it should not be given complacently. Be that as it may, it is still customary to give antibiotics to these patients before dental extractions or surgical operations. Procaine penicillin in a dose of 600,000 units injected an hour before the procedure and

two or three times a day for two or three days post-operatively (an equivalent dose of a suitable oral preparation may be substituted) may logically be used for dental, head and neck or chest surgery; while in abdominal or genito-urinary work a broad-spectrum antibiotic should be used.

The management of cor pulmonale is similar to that of congestive heart failure with the addition of antibiotics for the control of pulmonary infections, anti-spasmodics (amino-phylline, Isuprel, Vaponephrin®) and iodides as needed to treat wheezing and tenacious sputum. One should not use 100 per cent oxygen indiscriminately in these cases due to the hazard of producing carbon dioxide narcosis.

SUMMARY

The more commonly encountered problems in cardiac patients undergoing surgery have been discussed. A special plea has been made that more physicians become familiar with a drug which has given noble service to mankind for almost 200 years — digitalis.

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Cholelithiasis In Children

A Report Of Three Cases

OVID F. POMERLEAU, M.D.*

Eleven years ago I diagnosed my first case of cholelithiasis in a young female of sixteen and since then, I have encountered two other cases.

The literature on this subject is not abundant and most authors agree that prior to puberty, opaque biliary calculi are very rare. If gall stones are found in a white child, familial hemolytic anemia should be considered as a possible cause. Coffey states that sickle cell anemia is to be suspected if gall stones are found in a colored child. A case of cholelithiasis in a colored child of thirteen who also had sickle cell anemia has been reported by Weems. In these cases of hemolytic anemia, the stones may be composed almost entirely of the excessive blood pigment liberated by hemolysis. There is a deposit of calcium in some, so that a shadow can be cast by the roentgenogram. A pure pigment stone which casts no shadow can be seen only by use of the various gall bladder dyes. Cholelithiasis, although rare in children, is more frequently found than cholecystitis.

The symptoms of cholelithiasis in children are not as typical as in adults and therefore the diagnosis is more apt to be missed or only made at laparotomy when appendicitis has been suspected. The stones tend to remain in the gall bladder and the child has bouts of recurrent upper abdominal pain, accompanied by nausea and vomiting. There is usually no referred pain to the shoulder or back. The family and the physician at first may think these episodes are due to some dietary indiscretion. The pain may be severe enough to require opiates. Jaundice may be present if there is obstruction of the common duct by calculi — but this is rare.

The diagnosis is made by first knowing that gall stones do occur in children. The old adage that only the "fat, fair, and forty" are to be suspected of gall bladder disease should be discarded. When gall stones are suspected clinically, a roentgenogram will confirm the diagnosis.

The treatment consists of removal of the stones and the gall bladder if necessary. If stones are caused by hemolytic anemia, the gall bladder may not be diseased and only the stones need be removed. In the latter cases, Ladd and Gross do a splenectomy first to correct the anemia and then remove the stones at a later operation. They never perform a combined operation; the mortality rate is too high. If there is jaundice, exploration of the common bile duct is in order.

Case number one was a sixteen-year-old white female admitted to the Sisters Hospital on September 27, 1946. She gave a history of having had attacks of upper right quadrant abdominal pain for the past year accompanied by nausea and vomiting. A Graham series was ordered and the roentgenologist reported poor concentration of dye with mottled shadows suggesting the presence of calculi. There were no signs or symptoms of anemia. Physical examination was negative except for pain in the upper right quadrant of the abdomen. A cholecystectomy was performed and many cholesterol stones were found in a diseased gall bladder. Recovery was uneventful and the follow-up to date has shown no recurrence of the symptoms.

Case number two was a nineteen-year-old white female admitted to the Sisters Hospital on July 24, 1947 with a chief complaint of pain in the upper right quadrant of the abdomen accompanied by nausea and vomiting of one year's duration. The pain was severe enough to require opiates at times. The physical examination was negative except for tenderness in the gall bladder area. There were no signs or symptoms of anemia. A Graham series was ordered and the roentgenologist reported a mottling suggestive of calculi in the gall bladder. A cholecystectomy was performed. Pathological report was chronic cholecystitis and cholelithiasis. Recovery was uneventful, and she has remained well to this day.

Case number three was a thirteen-year-old white male admitted to the Sisters Hospital on January 7, 1954. I had seen this child on numerous occasions for a year prior to his admission because of episodes of pain in the upper abdomen. The attacks occurred always at the same time, being around eleven P.M., when he was awakened from sleep with severe abdominal pain, accompanied by nausea and vomiting. The parents thought he had appendicitis and each time he had an attack the Doctor was summoned. There was tenderness around the umbilicus and the family was reassured that it was not appendicitis. When the attacks became more frequent, the child was admitted to the hospital for observation and diagnosis. Physical examination of this tall thin boy was entirely negative except for tenderness around the umbilicus. Preliminary blood studies revealed 4,600,000 red blood cells, 10,400 white blood cells and Hb. of 13 grams. Differential count was normal. A G. I. Series was normal except for a speckled

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calcification to the right of L-2 and L-3 suggestive of gall stones. The first gall bladder series showed a non-functioning gall bladder. The calcification could still be seen in the right upper quadrant of the abdomen. A second Graham series was made and the same findings reported. Because of the presence of stones in this child, a complete study was made to rule out hemolytic anemia. Repeat blood studies revealed 4,200,000 red blood cells, 8,500 white blood cells and Hb. of 11.5 grams. The Platelet count was slightly elevated and the bleeding time reduced. The blood smears showed no indication of hemolytic anemia. A fragility test was made and found to be normal.

	Initial hemolysis	Complete hemolysis
Control	.42	.36
Test	.42	.36

A complete bone survey made by x-ray was found to be normal. It was then concluded that hemolytic anemia was not the cause and preparations were made for a cholecystectomy. The child was typed and cross-matched. The operation was done through a transverse incision. A large distended gall bladder was found filled with stones. The common duct was not distended and not explored. The gall bladder was removed. The pathologist's report was as follows: "The mucosal surface is velvety.

The wall shows minimal thickening. The lumen contains approximately seventy mulberry type cholesterol stones averaging two mms. in diameter. There is no evidence of impaction of any of the stones in the neck of the gall bladder. The lumen is virtually nonexistent. Microscopically the gall bladder showed thickening of the villi and wall." Pathological diagnosis: chronic cholecystitis and cholelithiasis.

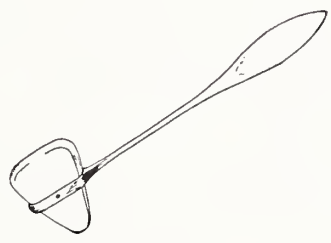
Recovery was uneventful. The child has been free of his symptoms to this day.

SUMMARY

Three cases of cholelithiasis in young patients under twenty are presented and discussed. When a child gives a history of recurrent episodes of upper abdominal pain, cholelithiasis must be suspected. Hemolytic anemia may be a complicating factor, and if found it should be corrected before proceeding with gall bladder surgery.

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Mucoviscidosis

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This disease was previously known as fibrocystic disease of the pancreas, mucosis, or cystic fibrosis. The disease derived its original name of fibrocystic disease of the pancreas from the fibrosis and cystic changes in the pancreas which were considered to be the primary lesions and which had been thought, until recently, to be an invariable feature. However, it is now known that in some cases the pancreatic lesions are not at all the outstanding phenomena of this condition and that the lung manifestations or hepatic changes may sometimes dominate the clinical picture. It has also been found that the mucous glands or other organs (e.g. the bronchi, esophagus, duodenum, gallbladder, salivary glands, and others) are often distended with abnormal viscid mucus. For this reason, the name Mucoviscidosis seems more appropriate for this condition.

Another outstanding feature of the disease is dysfunction of the sweat glands due to an inborn dyscrasia. This dysfunction may lead to severe electrolyte depletion of the patient because of the markedly increased concentration of the sweat which in most instances has proved to be 2-4 times normal.

It is a generalized hereditary disease of children due to dysfunction of the exocrine glands clinically characterized in most instances by the combination of symptoms of pancreatic insufficiency and chronic pulmonary disease. The basic defect, whatever its nature, appears to be genetically transmitted.

Mucoviscidosis is a relatively recently recognized condition. The original paper of Fanconi in Switzerland in 1936 did not attract much attention. It was not until Anderson in 1938 in this country described 49 cases gathered from the autopsy files of Babies Hospital in New York that interest in the condition was aroused. The same year cases were reported by Blackfan and May in Boston, and Harper in Australia. Prior to 1938 the diagnosis of Mucoviscidosis or fibrocystic disease had never been made from clinical evidence. The majority of patients died with the diagnosis of bronchopneumonia, the basic disease being unrecognized.

The condition is not as rare as was previously believed. The incidence has been variously estimated as between one in 600 and one in 1500 newborns. Even in the area of my practice several cases are known where a tentative diagnosis was made from clinical evidence and proven by the necessary laboratory findings. Recent literature reports suggest an increasing awareness of the disease in different parts of the country.

CLINICO-PATHOLOGICAL RELATION

The basic pathology is accumulation of what has

been interpreted as abnormal mucous leading to cyst formation in exocrine glands.

The clinical patterns of the disease may vary widely, as may be expected from the widespread tissue changes. They can be conveniently described as they tend to appear at four different age periods.

I. *Meconium Ileus*

Within a few hours or days after birth, this becomes manifested as an acute intestinal obstruction with bilious vomiting, gross abdominal distension, and absolute constipation.

Rectal examination is non-revelant. X-ray examination shows gaseous distension with fluid levels. A typical but not constant finding is the appearance of minute gas bubbles in the inspissated meconium which is causing the obstruction.

Occasionally, meconium ileus leads to perforation of the small bowel and meconium peritonitis. Most reported cases manifested this type of peritonitis at birth, perforation having taken place prior or during delivery.

Pathogenesis of meconium ileus has been related to pancreatic achylia occurring before birth.

On microscopic examination of the pancreas, masses of amorphous eosinophilic material are seen obstructing the lumen of acini and ducts, many of which are so distended as to have a cystic appearance. Connective tissue is prominent because of replacement fibrosis and condensation of the framework of this organ secondary to atrophy and disappearance of parenchymal cells. An important feature of the pancreatic lesion is its progressive nature.

II. *Intractable respiratory infection*

In the early weeks or months after birth the first signs appear very often in the form of an acute respiratory illness. Outstanding features are severe dyspnea, expiratory wheezing, and some fever. The chest is often blown up due to obstructive emphysema; commonly there is marked subcostal and suprasternal retraction due to bronchial obstruction.

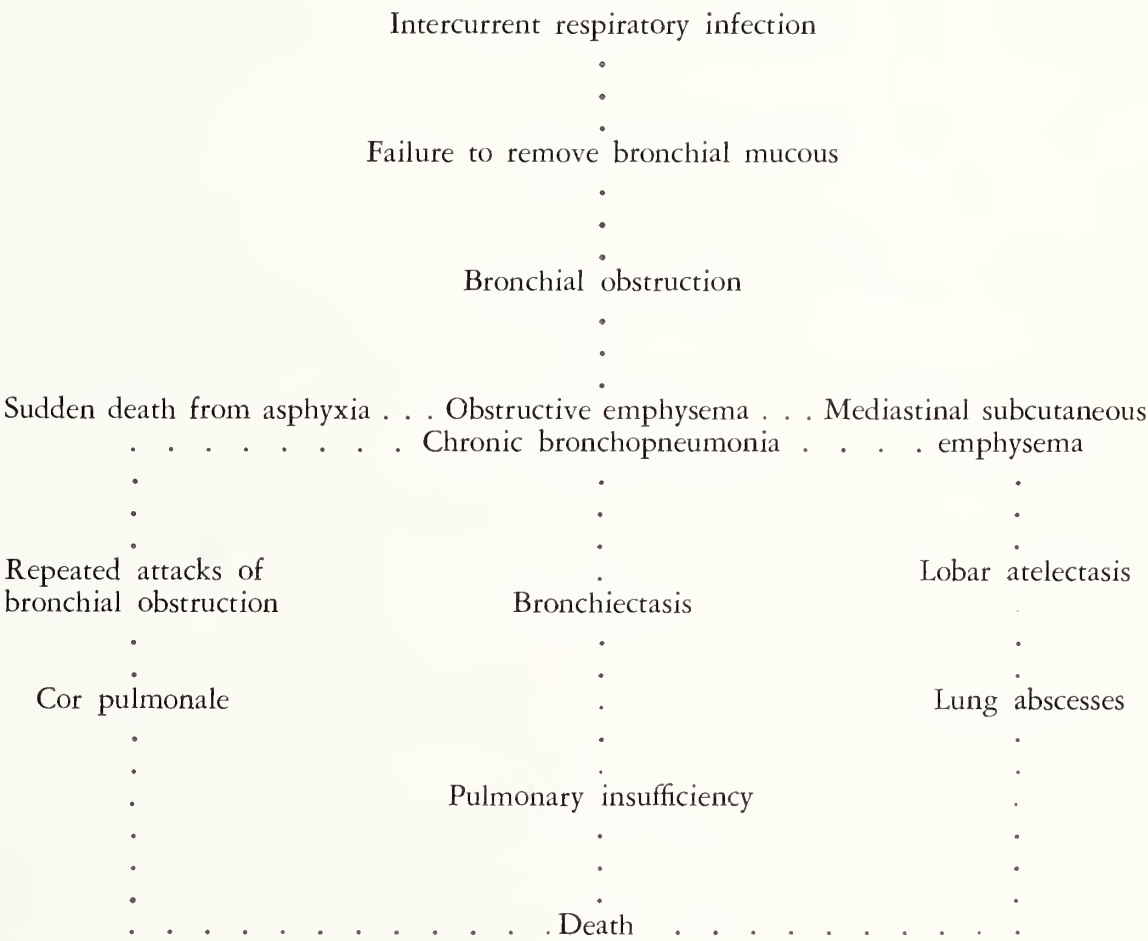
Clinical findings are sticky rales and rhonchi. These are often more striking than the X-ray findings which consist of hypertranslucency due to secondary emphysema, though in a later stage they will show a typical streaky appearance radiating outwards from the lung roots because of interstitial infection and fibrosis.

Infection by the *Staphylococcus Aureus* is so frequent as to be part of the disease with widespread bronchiolitis and obstructive emphysema as well as patchy atelectasis. The bronchioles are plugged with viscid mu-

copus. Bronchiectasis and/or multiple abscesses may occur; less commonly, alveolar consolidation emphysema. As in other *Staphylococcus* infections of the lung, spontaneous pneumothorax may produce a sudden emergency. A point to the true diagnosis may be found in the stool: often greasy and possessed of a strikingly foul odor. In its absence the diagnosis may yet be suspected when the pulmonary symptoms are found to respond inadequately to antibiotics.

Another rather characteristic finding is squamous metaplasia of the bronchial epithelium, which is probably due to a combination of chronic sepsis and Vitamin A deficiency. Probably most of these patients die in infancy of acute lung infection. On the other hand, the lungs of those who survive to later childhood sometimes show a remarkable improvement though ultimate death of cor pulmonale seems inevitable.

TABLE I
Course of severe respiratory disease and its complications in Mucoviscidosis



III. *Marasmus and Steatorrhoea*
After the age of four months, or sooner, the introduction of cereals to the diet results in the stools becoming frothy, foul-smelling, and often loose. Steatorrhoea and the subsequent poor absorption of liposoluble vitamins A, D, E, and K is present from birth, yet the excellent and sometimes ravenous appetite of these infants in the absence of respiratory infection, may prevent serious wasting during the period of pure milk feeding. The typical combination of failure to thrive, excellent appetite, and excessively foul stools in the first year of life should always suggest the diagnosis of Mucoviscidosis.

IV. *Coeliac Syndrome*
With a milder degree of the disease the child may not reach the physician until the toddler age. The victim then appears wasted and under-developed with a distended abdomen and is found to pass frothy or greasy, semi-formed, foul-smelling stools. The unwary may make a diagnosis of ideopathic coeliac disease, but a differential diagnosis can be made on clinical grounds alone. (Table II)

V. *Portal hypertension*
Rarely, the patient presents himself with gastrointestinal bleeding and hypersplenism due to portal hypertension.

TABLE II

<i>Mucoviscidosis</i>	<i>Coeliac Disease</i>
Early weeks of life . . .	Not before nine months old
Very good appetite . . .	Unhappy anorexia
Chronic respiratory infection	Absent
Spasmodic un-productive cough . . .	Absent
Not necessarily anemia	Hypochronic anemia
Familial	Not

Extensive cirrhotic changes in the liver were noted at necropsy as well as foci of biliary cirrhosis. Changes have been found in the liver as early as three days after birth but appear to become more common and more extensive with advancing age. The initial lesion is seen as a varying degree of pitting, corresponding to

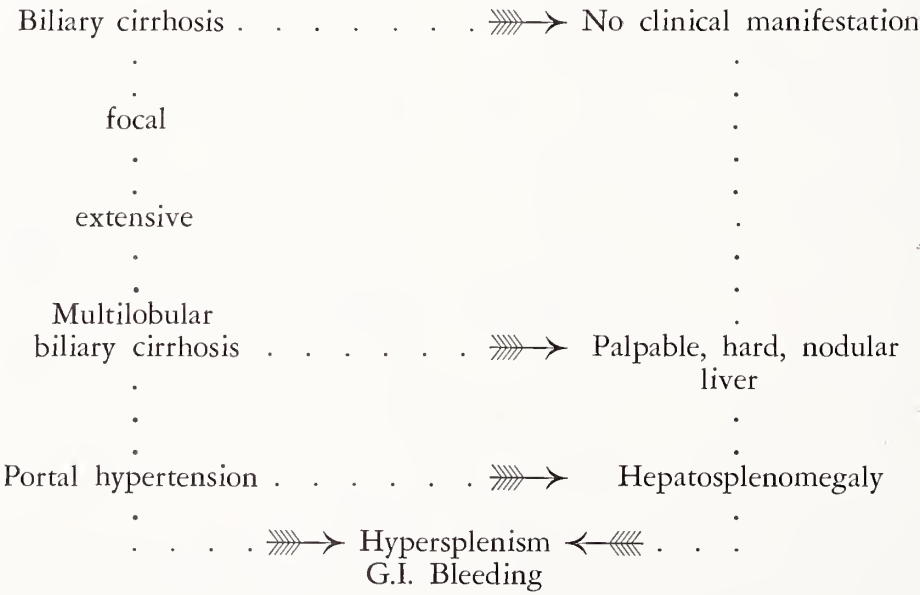
small stellate depressed cirrhotic foci. Microscopically, the bile ductules are plugged with concretions of amorphous eosinophilic material and are surrounded by an area of fibrosis, biliary proliferation, and inflammatory reaction.

The nature of the concretions is not clear but they show a morphologic and histological resemblance to those found in the pancreas. Both may be interpreted as resulting from inspissated secretions. Their presence is characteristic and diagnostic of Mucoviscidosis.

With time multiple foci appear. Diffuse portal changes take place, multiple lobules are encircled and trapped by the fibrotic process as fibrosis becomes more extensive. The architecture of the liver is destroyed and the original foci of concretions may on occasion even disappear. A very striking characteristic of this condition is the limited bile stasis and therefore the absence of icterus. The serum Bilirubin is only rarely slightly elevated. The condition of the liver as a whole is essentially negative for clinical manifestations practically until the liver is so far cirrhotic that eventually portal hypertension occurs. We then find hepatosplenomegaly, hypersplenism, gastro-intestinal bleeding or ascites, or a combination of all three.

TABLE III

Course of clinical events in liver involvement



Other typical findings at necropsy have been distension with mucous of the salivary glands and the mucous glands of the bronchi, esophagus, duodenum, and gallbladder, though these usually do not lead to clinical manifestations.

An inborn dyscrasia of the sweat glands may explain the recent observation that in this disease there is an excessive loss of Sodium Chloride and Potassium through the skin, leading to sometimes severe electrolyte depletion and heat casualties.

DiSant'Agnese describes the Clinico-Pathological Relation as shown in Table IV.

DIAGNOSIS

Final proof of diagnosis rests on finding the absence of trypsin or its presence only in very low titres (under 1-50) in duodenal juice obtained by aspiration. The feces may also be tested for proteolytic activity, although this may be due, on occasion, to bacterial enzymes and not to trypsin. However, in children under two

TABLE IV
MUCOVISCIDOSIS

Unknown basic defect

Dysfunction of Exocrine Glands

Mucous-producing glands		Non-mucous-producing glands			
Pathologic lesions present		No pathologic changes			
Abnormal secretions leading to obstruction of		Increased secretory rate		Increased electrolyte concentration	
Small intestine (by inspissated meconium)	Pancreatic Ducts	Bile Ductules	Bronchi Bronchioli		
	Secondary degeneration of exocrine parenchyma of pancreas	Focal biliary fibrosis with obstruction	Bronchial obstruction	Parotid glands	Sweat glands
	Pancreatic Achylia	Multilobular biliary cirrhosis	Generalized obstructive emphysema	No clinical manifestations	Cardiovascular collapse
Intestinal obstruction in newborns	Mal-absorption Syndrome	Portal Hypertension	Chronic Broncho-pneumonia		

years of age the finding of proteolytic activity in high titres excludes fibrocystic disease and this simple technique is a useful screening test which can be used to avoid some unnecessary and time-consuming duodenal intubations.

The failure of the feces to digest gelatin in dilutions above one in 50 in three consecutive specimen is strong presumptive evidence of Mucoviscidosis. The abnormally high electrolyte content of the sweat has been considered the most sensitive diagnostic test by Shwachman and co-workers. The test is claimed positive in 99% of cases and will also distinguish those patients who have normal or partial pancreatic function.

PROGNOSIS

No child has ever been cured of this disorder, though life has been prolonged for years and made immeasurably happier. Perhaps the majority of these unfortunate children die in infancy of progressive lung destructions.

In older children, some of whom are reaching puberty, the chronic lung fibrosis results in death from cor pulmonale.

TREATMENT

The neonatal emergencies come within the province of the surgeon. He has achieved some remarkable results in patients who have reached him soon after birth. After this stage, there must be two aims in the treatment of these children.

- 1. Prevention or control of respiratory infection
- 2. Maintenance of reasonable nutrition

Neither is fully within our present capabilities. Nonetheless, the outlook has been vastly improved by the broad spectrum antibiotics. A high protein intake is rational, but there is probably no advantage in strict limitation of fat. Triple strength pancreatin in the form of enteric coated granules seems to be of value in some patients. Infants should be given 15-45 grains (1-3 grams) in each feeding. Older children may be

coaxed to ingest double this amount. A water-soluble preparation of A and D vitamins should also be prescribed.

Antibiotics are given in an intensive course lasting from 7 to 15 days and frequently hospitalization is required in the presence of a respiratory infection. If, on the other hand, evidence of pulmonary disease no longer persists, these agents should be discontinued. The prolonged administration of antibiotics is undesirable and the danger of emergence of bacterial resistance is recognized. However, administration of these drugs over a long period of time is frequently imperative.

There is no doubt that the future of these children is influenced more by the degree of the respiratory infection and the extent to which it can be kept under control, than by any other therapeutic measure.

Good hygienic surroundings naturally improve the prognosis by diminishing the chances of respiratory infection.

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Present Day Concepts Of Endometriosis

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Endometriosis is a self-limiting condition of young women in the late child-bearing period, commonly between the ages of 25 and 40 years, characterized by the presence of aberrant endometrium in the viscera or wall of the lower abdomen. It is found more commonly in women whose pregnancies occur late and infrequently.¹

Several outstanding theories as to the cause of this condition have been evolved. Sampson^{2,3} in 1921 suggested that the aberrant endometrium results from reflux of endometrial tissue through the fallopian tubes with seeding of the peritoneal surfaces. This transplanted endometrium then grows and reproduces the changes found in the intrauterine endometrium, namely: cyclical desquamation and bleeding. Ivanoff⁴ of Russia, on the other hand, has felt that the aberrant endometrial tissue represents metaplasia of coelomic embryonic cells stimulated by the hormonal reactions of menstruation. Meigs¹ tends to feel that this theory is more reasonable on clinical and experimental evidence.

PATHOLOGY

Areas of ectopic endometrium undergo the cyclical changes of menstruation just as the normally located endometrium. Endometriomata are lined by endometrial glands surrounded by cellular stroma, and at laparotomy may be filled with blood or pigment. Initially, a lesion may bleed into the peritoneal cavity. This irritation sets up a fibroblastic response leading to adhesions and encapsulation. With progression, the encysted fluid increases and causes pain referable to the site of the lesion

and the pain intensifies with each subsequent menstruation. The increasing pressure may cause pressure obliteration of the endometrial lining. The lesion may become locally invasive and may simulate carcinoma or tuberculosis. The invasive nature may also cause such intimate adherence of viscera as to defy surgical separation. Malignancy originating in endometriomata is rare.

PROGNOSIS

The chief symptoms of endometriosis are: (1) Dysmenorrhea gradually becoming more severe, especially in a patient who has not complained of pain previously, i.e. secondary dysmenorrhea; (2) rectal pain on defecation; (3) lower abdominal pain with menses; (4) menorrhagia; (5) periodic attacks of intestinal obstruction or increasing constipation during menstruation; (6) dyspareunia; (7) pains down the thighs during periods; (8) rectal bleeding at menses; (9) dysuria and (10) sterility.

Routine laboratory procedures are of no significant diagnostic value. Culdoscopy may reveal typical implants on the visceral surfaces. If the symptom complex can be ameliorated by inhibition of ovulation and menstruation, the chances are good that the lesion is one of endometriosis.

OPERATIVE FINDINGS

Lesions vary according to their position, length of existence and the phase of the menstrual cycle.

On the cervix they may present as red, elevated, vel-

very nodules or as 2-5 mm. "blood blisters," which are bluish-black. At times, they may appear as ulcerated areas or as papillomata.⁵

Within the peritoneal cavity, endometriomata may be everywhere, but especially on the peritoneal surfaces of the pelvic viscera. Blue-domed or chocolate cysts are most frequently found on or in the ovaries. The uterus, tubes, broad ligaments, rectovaginal septum, sigmoid and appendix are common sites. An abdominal wound scar may contain the aberrant endometrium. Scarring with puckered hemorrhagic areas and adhesions are the results of long-standing endometriosis found at laparotomy and may occur in any of the pelvic contents.

COMPLICATIONS

Because the end results of endometriosis are concerned with scar formation, various obstructive complications may ensue. Sterility is a common result because of fixation of the fimbriae, stenosis of the tubes, or ovarian failure. Fallon⁶ notes that ten per cent of four hundred patients with endometriosis had partial to complete stricture of the large and small intestine. Ureteral obstruction is not uncommon. Death from a gangrenous chocolate cyst of the ovary has been described.⁷

TREATMENT

Treatment is necessarily individualized and must take into account the age of the patient, marital status, number of children, infertility, and emotional balance of the patient. Early and frequent pregnancy by preventing menstruation and checking the progress of the lesions is the best prophylaxis.

Androgen therapy (150-275 milligrams) of testosterone propionate in oil intramuscularly over a period of two to three weeks followed by daily oral methyl testosterone (10 milligrams) may result in rapid reduction of pain and tenderness and swelling of grossly cystic endometriomata.⁸ Stilbestrol therapy producing amenorrhea for three to six months has been found effective by Karnaky⁹ who has described in detail his method of administration.

X-radiation (in the reproductive years) may be dangerous to the germ plasm and therefore is not to be recommended.

The status of endometrium whether intra or extra-uterine depends on the activity of the ovary. When menstruation can be prevented by castration or suppression of ovulation, then the progress of the lesions is halted. Temporary suppression of ovulation by Androgen or Estrogen therapy strives to provide a quiescent period during which endometriomata may regress and perhaps permanently.

SUMMARY

There has been presented a summary of the present-day status and treatment of endometriosis. Conservative measures especially in the younger or child-bearing ages are stressed. More radical procedures may be resorted to after the age of 40.

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SPECIAL ARTICLE

A Class For Retarded Children In Sanford

MELVIN BACON, M.D.

In making examinations and taking histories on thousands of students in this area over the years, an appreciable number have been found to be below par or retarded and required more special attention than could be given in the regular classes. There is a real need for a special class in view of the relatively large number of school children falling into this category. It appears that these children could benefit from individual instruction.

One of my fondest ambitions was to see a special class for retarded children started in Sanford. A discussion with our efficient and progressive superintendent of schools cast the die. Realizing the merits of such a project, the proper authorities put the wheels of progress into action.

As a result of the cooperation of all concerned, this class has become a reality. Approval has been given by the State Department of Education, the Sanford School Board, the Budget Committee, and finally by the citizens at the Town Meeting. The town has allotted \$2,000 for this purpose for the period of September to December 31, 1957, and the State will contribute a similar amount. Appropriately trained personnel and suitable quarters have been obtained. The classroom will be made as attractive as possible to serve the children of Sanford and Springvale and will be located in the basement of the Emerson School.

It has been about six months since plans for this program were started and now they are ready to be put into practice. The class is scheduled to open at the beginning of the school year in September of 1957. The hours will be from 8:35 a.m. to 11:25 a.m. and from 12:55 p.m. to 3:25 p.m. These periods are in accord with the regular school hours. Transportation will be furnished to those pupils beyond walking distance from the school. Examinations to determine placement of the children were conducted in August, 1957 at various schools. The Stanford-Binet Method or the Wechsler Intelligence scale will be used for testing. The age limits are from five to sixteen years.

If a child attends the class at anytime below the upper age limits, he will be permitted to continue be-

yond this age if his family so wishes. The IQ level will be from fifty to seventy-five. Each child will be instructed in courses according to his aptitude and needs. Children with physical disabilities will also be admitted and given special consideration.

Thus far, thirty referrals have been received and fifteen of them will be selected. This number is the limit for one class and one instructor who has been trained extensively in this specialty.

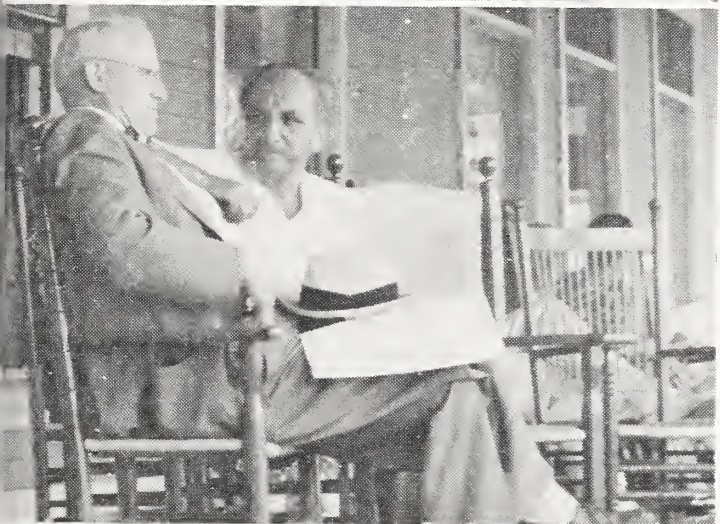
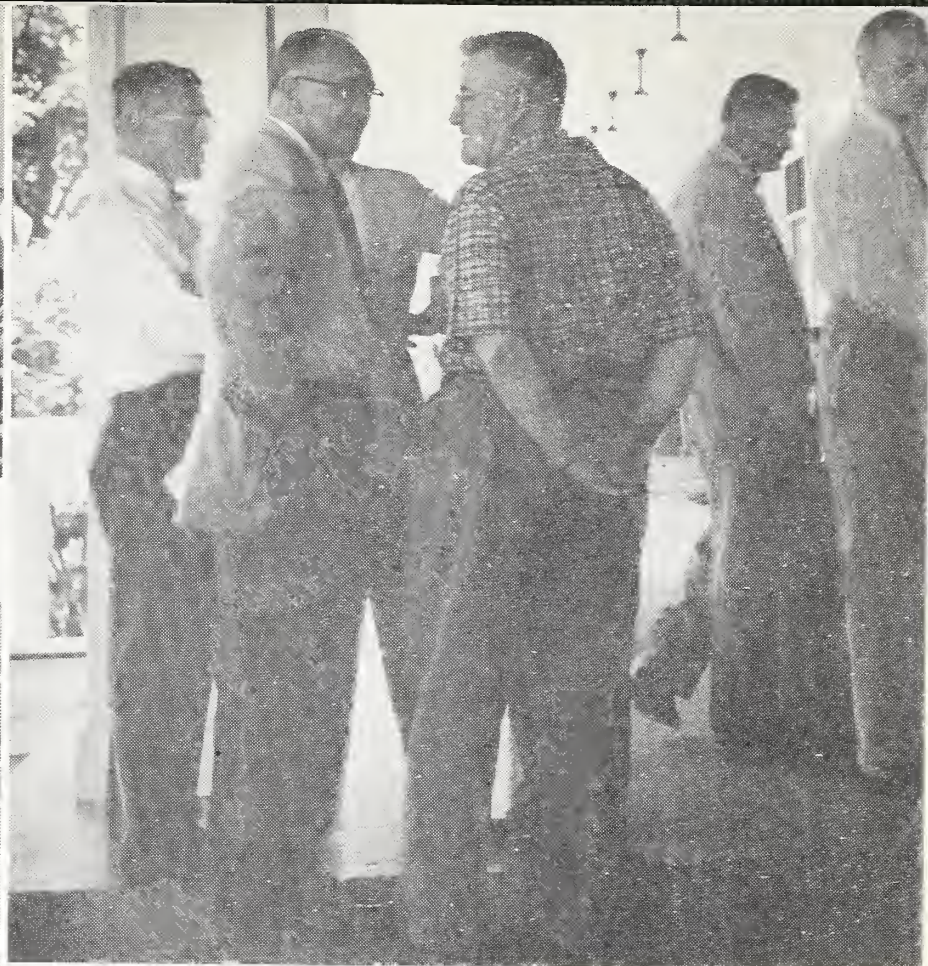
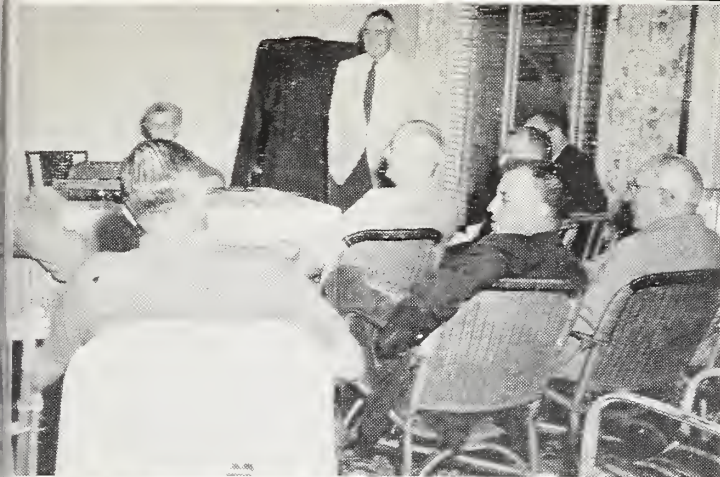
It may be asked "What is the purpose of such an endeavor?" In brief, it is to teach, to investigate, to train and to make such children an asset to the community. It is an attempt to make them self-sufficient and to provide them an education, even though it may require special instruction and a much longer period of time.

I am reminded of a poem by Longfellow which seems apropos to the starting of such a class. It is that portion of the "Building of the Ship" known as the "Launching" from which I quote:

"Then the Master,
With a gesture of command,
Waved his hand;
And at the word,
Loud and sudden
There was heard,
All around them and below,
The sound of hammers, blow on blow,
Knocking away the shores and spurs.
And see! she stirs!
She starts, — she moves, — she seems to feel
The thrill of life along her keel,
And, spurning with her foot the ground,
With one exalting, joyous bound,
She leaps into the oceans arms!"

In conclusion, this paper presents a brief report on the formation of a special class for retarded children in Sanford, Maine. It is hoped this project will be come a successful and worthwhile endeavor in helping retarded children become a worthy addition to our town.

257A Main Street, Sanford, Maine.



ANNUAL SESSION SCENES

Left — top to bottom:

1. Dr. Albert, Dr. Winchenbach, Mrs. Kennard, Dr. Hanley and Councilors.
2. Speakers at Mass Casualty Care Program.
3. Dr. Adams, Thomaston and Dr. Davidson, Portland.
4. Dr. Lloyd Brown, Program Chairman, receiving his badge.
5. Mrs. Charles W. Steele, Lewiston and Mrs. Ralph A. Goodwin, Sr., Auburn, Immediate Past President, Woman's Auxiliary.

Right:

1. Drs. Stinchfield, McWethy, Albert, Ficker and Kinder relax between sessions.
2. Past Presidents George L. Pratt, M.D. and Warren E. Kershner, M.D.
3. The Council—Drs. McWethy, 4th district; Richards, 1st district; Weymouth, 5th district; Woodcock, 6th district; MacDougall, 2nd district; Allen, 3rd district.

The Journal of the Maine Medical Association

DANIEL F. HANLEY, M.D., Brunswick, Editor

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Across The Desk

Maine M.D.'s on National Scene

Charles Steele, M.D., Lewiston, was appointed to the AMA's "Asiatic Flu Committee" and he and Dean Fisher, M.D. of Maine's Department of Health and Welfare attended Public Health Service sponsored meetings on medical defense against Asian influenza in Washington, D. C. August 27 and 28, 1957.

Resolutions Adopted by Association of State and Territorial Health Officers at Special Meeting on Influenza, Washington, D. C., August 27-28, 1957

Committee on Vaccination Promotion

What is the primary objective in vaccination promotion programs:

The primary objective in promoting vaccine programs is to prevent illness and death from epidemic influenza.

Should there be a system of interstate allocation of influenza vaccine?

We recommend that there be a system of interstate allocation of vaccine based on population and a voluntary agreement with the manufacturers.

What priorities, if any, should be established for influenza vaccination and how and by whom should these be determined?

- a. That recommendations be established for the use of influenza vaccine.
- b. *Whereas* a complete study of the nature and history of influenza indicates the U. S. may be faced with an epidemic of major proportions, and *Whereas* influenza vaccine is being manufactured

and will become increasingly available but is not yet available for everyone.

Now, therefore, be it resolved that the Surgeon General of the Public Health Service recommend to civilian physicians that they give priority to:

- (1) those individuals whose services are necessary to maintain the health of the community
- (2) those individuals necessary to maintain other basic community services
- (3) persons with tuberculosis and others who in the opinion of the physician constitute a special medical risk.

and be it further resolved that the Committee on Influenza of the AMA take such action as necessary to assist in implementation of these recommendations.

- c. *Whereas* other basic community services vary from place to place, be it resolved that each level of government be encouraged to establish advisory committees broadly representative in nature to consider which groups are deemed essential to maintain necessary services.

What recommendation should be made regarding vaccination of children?

Administration of influenza virus vaccine containing the "Asian" strain is approved for use in children and that this be initiated at about three months of age. From experience with earlier vaccines evidence has been obtained that a somewhat better antibody response can be obtained in children if the vaccination is given in two injections instead of one. The doses recommended are as follows:

For pre-school children (3 months to 5 years) — 0.1 cc. intracutaneously or subcutaneously, repeated after an interval of one to two weeks.

For children 5 to 12 years of age — 0.5 cc. subcutaneously, repeated after an interval of one to two weeks.

For children 13 years of age and older — the dose for adults (1.0 cc. subcutaneously in a single injection) may be used.

Imponderables are Many in Asian Flu Situation

Surgeon General Leroy E. Burney's press conference early in August on Asian influenza generated more questions than answers. It left no doubt of government's good intentions and its actual effectiveness in stimulating vaccine production and planning for a public education campaign. But the conference could not supply answers to these questions, to cite only a few: Will one dose of the monovalent vaccine now in production give protection for an entire season? How much will it cost the public? Assuming that demand for the vaccine will exceed supply well into winter months, should a priority system be established — by vocations or age groups or whatever — and, if so, should this be done at national or state or county levels?

Eli Lilly Number One Producer

The six houses manufacturing flu vaccine have a goal of 60 million cc by February 1. Normal annual output is 3 million cc. Eli Lilly & Company, which has turned out two-thirds of Asian strain vaccine produced to date, is increasing its production capacity 70-fold. The other licensed manufacturers are Lederle; Merck, Sharp & Dohme; National Drug; Parke, Davis and Pitman-Moore.

Medicare headquarters is following developments with interest. Immunizations do not come within its scope, but if Asian flu prophylaxis is recommended for pregnant women or children in certain age groups there is every likelihood that Medicare will make appropriate accommodation.

Hearings Scheduled for Next Year on Jenkins-Keogh Plan

Chairman Jere Cooper (D., Ky.) of the House Ways and Means Committee, which steadfastly has refused to consider the Jenkins-Keogh bills this year, has announced general taxation hearings to start next January 7, when this legislation will be among the subjects taken up.

The Jenkins-Keogh plan strongly supported by the AMA, would allow self-employed persons to set aside a portion of their income in pension plans and defer payment of income tax on it until it is received back in the form of pensions. Corporations now may do this for their employees. The American Thrift Assembly, headquartered in Washington, has carried on the fight for the legislation this year.

Connecticut Physicians Favor Social Security

Rep. Albert Cretella (R., Conn.) has presented to the House a referendum from the Connecticut State Medical Society showing a majority of physicians replying favored being brought into the social security program on a compulsory basis; it was referred to the House Ways and Means Committee.

University Survey Reveals Diphtheria Susceptibility

Nearly half of the new students entering the University of Minnesota in one year were not immune to diphtheria in spite of a long-time statewide program of diphtheria immunization, it was reported recently.

Three university researchers said that 47.2 per cent of 2,899 students entering the university in the fall of 1954 responded positively to the Schick test. A positive reaction to this skin test indicates susceptibility to the disease.

The researchers also found that adults can be inoculated against the disease without suffering severe reactions. The likelihood of such reactions has long been a deterrent to the routine inoculation of adults.

Their study, reported in the August 24 *Journal of the American Medical Association* substantiates other studies which show a high degree of susceptibility to diphtheria in the adult population. It also indicates the need for and the safety of routine inoculation of all students entering college, they said.

The percentage of positive Schick reactions was significantly higher in those students 20 years of age and over than in those under 20 years. It was also higher for men in the age group 20 to 24 than for women in the same age group.

The researchers noted that 42.3 per cent of the 16- and 17-year-old students were susceptible to diphtheria. This was especially significant, they said, since most of the students came from Minnesota, where diphtheria immunization has long been accepted by the public and vigorously promoted by the state health department.

All students with positive Schick tests were immunized against the disease, they said. Mild adverse reactions to the immunization occurred in many students, but they were not severe enough to rule out the routine use of diphtheria inoculation in students entering college, they concluded.

The authors are Drs. Ruth E. Boynton and Donald W. Cowan, and Paul Rupprecht, M.A., of the University of Minnesota Health Service, Minneapolis.

U. S. Surplus Handouts Hit Peak in Second Quarter

States are receiving steadily increasing amounts of Federal surplus property for distribution to public health, educational and civil defense facilities. Figure for 1957 second quarter hit a new high, \$62,360,609, this sum representing acquisition cost to the government of equipment, supplies and real property allocated

among states and territories. Only \$1,412,120 was in real property. No. 1 recipient was California, with \$5,543,312. Others getting more than \$2 million: New York, \$4,113,031; Texas, \$3,518,457; Pennsylvania, \$3,073,589; Virginia, \$2,887,397; North Carolina, \$2,735,084, and Illinois, \$2,733,830.

Tranquilizers May Upset Mental Hospital Design

Now it's architecture that's being affected by the widespread use of tranquilizing pills.

Architecture Forum magazine reports in its July issue that in at least one state the successful use of tranquilizers on mental patients "has struck a provocative blow at institutional architecture." The California legislature, the magazine reports, has recommended that "ma-

jor expenditures on mental hospitals be postponed" until the full effect of the new drugs on design is evaluated.

According to Forum, California's law-makers have been advised by a special committee that tranquilizing drugs have started a new trend "away from the maximum security type of facility and toward the 'normal' hospital facility." There is now a greater need for activity rooms, more recreational and occupational therapy rooms and more outpatient and day care facilities.

Forum says the California report suggests that the future mental hospital will "very likely be composed of small units of several hundred patients and the entire structure will change, with most of the patient load going to outpatient clinics."

Fall Clinical Session of the Maine Medical Association

October 13, 14, 15, 1957
Waterville, Maine

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Clinical Associate in Medicine, Harvard Medical School
Assistant Visiting Physician and Associate in Medical Research, Beth Israel Hospital

* * * * *

November	6, 1957	Dr. Mario Baldini Erythrokinetics — Bone Marrow Production and Hemolysis
November	13, 1957	Dr. William Dameshek Immuno-hematology
November	20, 1957	Dr. Fernando A. Rubio, Jr. The Abnormal Hemoglobin Syndromes
November	27, 1957	Dr. Robert Goldstein The Hemorrhagic Disorders
December	11, 1957	Dr. William Dameshek Polycythemia and Related States
December	18, 1957	Dr. Norma B. Granville The Chemotherapy of Leukemia

* * * * *

This course will total 12 hours and is designed to be of value to all practicing physicians. A certification for 12 hours of post-graduate medical education will be given to each physician on completion of the course.

All lectures will be held at the Central Maine General Hospital from 4:00 P.M. to 6:00 P.M.

Fee, \$30.00. For registration form write: Ralph Zanca, M.D., Chairman, Staff Educational Committee, Central Maine General Hospital, Lewiston. Checks should be made payable to Central Maine General Hospital.

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The Journal of The Maine Medical Association
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DEAN H. FISHER, M.D.
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State of Maine

Department of Health and Welfare

Division Of Mental Health

MARGARET R. SIMPSON, M.D., *Director*

For the past ten years the Division of Mental Health has been supplying community mental health services to the state in the form of mental health clinics, consultation services, and educational materials. During this period over 4000 persons, both children and adults, have received some form of psychiatric service in the clinics. Most of these persons have had mild mental difficulties; only a small percentage, about 2 per cent of the 4000 have been ill enough to be called psychotic and advised to have treatment in a mental hospital. Most of the children and adults have had emotional difficulties that could be helped by relatively short term treatment in the clinics.

Portland is the only area in which there has been a stationary full-time clinic. This clinic has had its own personnel, consisting of a part-time psychiatrist, full-time psychologist and psychiatric social worker. This clinic has provided the greater part of continuous treatment, having a play therapy room for the children and group therapy for adults. These types of treatment can be carried on only in a stationary clinic with a full-time staff.

The headquarters of the Division is in Augusta where the personnel consists of a Director-Psychiatrist and two psychologists. These persons make up the traveling clinic and cover the rest of the state. Weekly clinics are held in Lewiston and Augusta; monthly clinics are held in Waterville and Bangor. The more distant areas are visited several times a year. These traveling clinics provide mainly diagnostic and consultation service. Little treatment can be undertaken because of the length of time between visits. The traveling clinic is greatly handicapped by the lack of a psychiatric social worker. This type of trained worker is so scarce that the Division has never been able to secure more than one.

Referral sources include all the divisions within the Health and Welfare Department and other state agencies such as The Division of Vocational Rehabilitation and The Division of Special Education. About 25 per cent of the referrals come from schools, another 25

per cent from private physicians and the remaining 50 per cent is made up of referrals from private social agencies, courts and families. Reasons for referral include behavior difficulties, bedwetting, stealing, fire-setting, speech problems (stuttering), convulsions, mental retardation, anxiety and personality difficulties.

REASONS FOR REFERRAL

The following reasons for referral were given on some of our application sheets:

"A mother wants her three-and-a-half-year-old son seen as he does not talk yet. He seems to understand what is said."

"A Child Welfare worker wants an eleven-year-old girl evaluated in order to place her in a new foster home."

"A physician asks to have a 28-year-old man seen because he is so nervous and fatigued he cannot work."

"The Court asks for psychiatric examination in the case of a juvenile who has broken into stores and stolen property on several occasions."

The above cases receive diagnostic services and recommendations are made to the referring agents. In areas where treatment is available it is undertaken by the psychiatrist and often by the psychologist or psychiatric social worker under the medical supervision of the psychiatrist and all recommendations are made by the psychiatrist. Persons having convulsive seizures are seen for diagnosis and referred back to the family doctor with recommendations for treatment. Many psychoneurotics can be given supportive treatment by their family physicians who are encouraged to care for these patients after they have had a diagnostic work-up at the clinic. Play therapy is used with children showing emotional disorders; finger painting, clay modeling and other play therapy techniques give them a chance to express their feelings in a permissive setting. Group therapy has been used with a group of mothers to help them obtain a more objective understanding and acceptance of themselves, their children, their families and their community. Parents of retarded children are

given help in understanding and working with these children and many of the children are checked at regular intervals for progress.

With the increased welfare programs in the state, the Division has been called on to evaluate a good number of potential recipients. Psychiatric evaluations are often necessary to plan adequately for vocational rehabilitation as well as physical rehabilitation.

CASE HISTORIES

The following case histories may be of interest:

Case 1. An eleven-year-old male child in the custody of the state was referred by the social worker because he invented fantastic stories, threatened other children, refused to mind the foster mother, did poorly in fourth grade and would read only those stories centering around orphaned children and their problems. He had been completely rejected by his parents and had been boarded in many homes before being committed to the state. He was found to have normal intelligence and showed much hostility and passive resistance during the interview. Much of his hostility was directed toward women. This explained his lack of adjustment in his foster home where the foster mother was the dominant figure.

He constantly demanded security from others but did not know how to relate well enough to others to get it. Thus he was constantly frustrated. It was felt that if he could be in a group situation where he could learn interpersonal relationships and have some security he might be able to make a fair adjustment. Residence at The Sweetser Home for Emotionally Disturbed Children was recommended.

Case 2. A five-and-a-half-year-old girl was referred by the family physician because she was late in walking and talking. She was severely ill with pneumonia at one-and-a-half years and her general development was slow in comparison with other children in the family. She slept poorly, had frequent crying spells and was inattentive. During the interview she was not interested in play material, did not follow instructions and paid no attention to the mother's requests. A social maturity scale gave her a social age of three years. An adequate mental age could not be obtained at this time. The situation was discussed with the mother, ways of handling and training were explained and arrangements

were made to re-evaluate her in one year. At the following examination she appeared quite changed. She was able to follow simple instructions, was interested in what went on and could work with the play material. However, she was very distractible and her attention was easily diverted by any outside noise. On a psychological test she functioned at a mental age of three years and was considered mentally defective. She had gained a year in social development. The mother was encouraged to continue social training and the child will be checked in another year.

Case 3. A seventeen-year-old girl was referred by the family physician because of depression. She was the youngest of ten children and was always protected. As a child she was very quiet and shy. She left school at the end of the seventh grade at the age of fourteen because she was depressed. Following this she stayed by herself and did not want to leave the house. One brother had a mental illness, probably schizophrenia. On examination she was a little apprehensive, startled easily. She described school as being too hard for her. She became worried over it and could not do any school work before she left. She felt that no one was interested in her, that she was not wanted by her family. She was afraid of dying and did not want to go to church. She spoke of God talking to her and insisted that she actually heard a man's voice. She was given a psychological test and was found to function at a borderline level. It was felt that she showed a definite schizophrenic type of reaction and was considered psychotic. Since she was not acutely sick and created no problem at home, she was seen at monthly intervals in the clinic. She showed little change over a six-month period. At the last visit her hallucinations had disappeared and the father did not wish further clinic attendance.

TEACHING PROGRAM

The Division takes an active part in teaching mental health through lectures to student nurses, teachers, social workers, parents and other interested groups. A film library contains some twenty films on mental health subjects, particularly child development. Numerous pamphlets on various aspects of mental health are available.



ANSWERING QUESTIONS



The Role Of The Doctor In Blue Shield

Dr. Fred Sternagel, President of the Iowa State Medical Society, and Dr. James W. Colbert, Jr., St. Louis University's Dean of Medicine, have offered sound counsel on shaping the course of Blue Shield. Both agree that the future of these Plans depends upon the guidance the profession gives to their development.

On the President's Page in the Iowa Journal for June, Dr. Sternagel reminded his colleagues that Blue Shield must continue to shape its course in accordance with changing conditions and public demand so that the program would continue to serve as an effective means of budgeting the cost of medical care.

"Blue Shield's job," wrote Dr. Sternagel, "is not yet finished for the spectre of 'socialized medicine' still haunts us. We shall have to cooperate intelligently and unselfishly, if our Plan is to protect the dignity of individual enterprise. It is clear that this program cannot continue to maintain leadership in a competitive field unless we work more closely (with it) than ever before."

Meanwhile, in San Francisco, Dr. Colbert told an annual staff day audience at St. Mary's Hospital that "it is absolutely essential that the plans do not get out of the control of the medical profession; if they do, the profession and the welfare of the patient will both suffer."

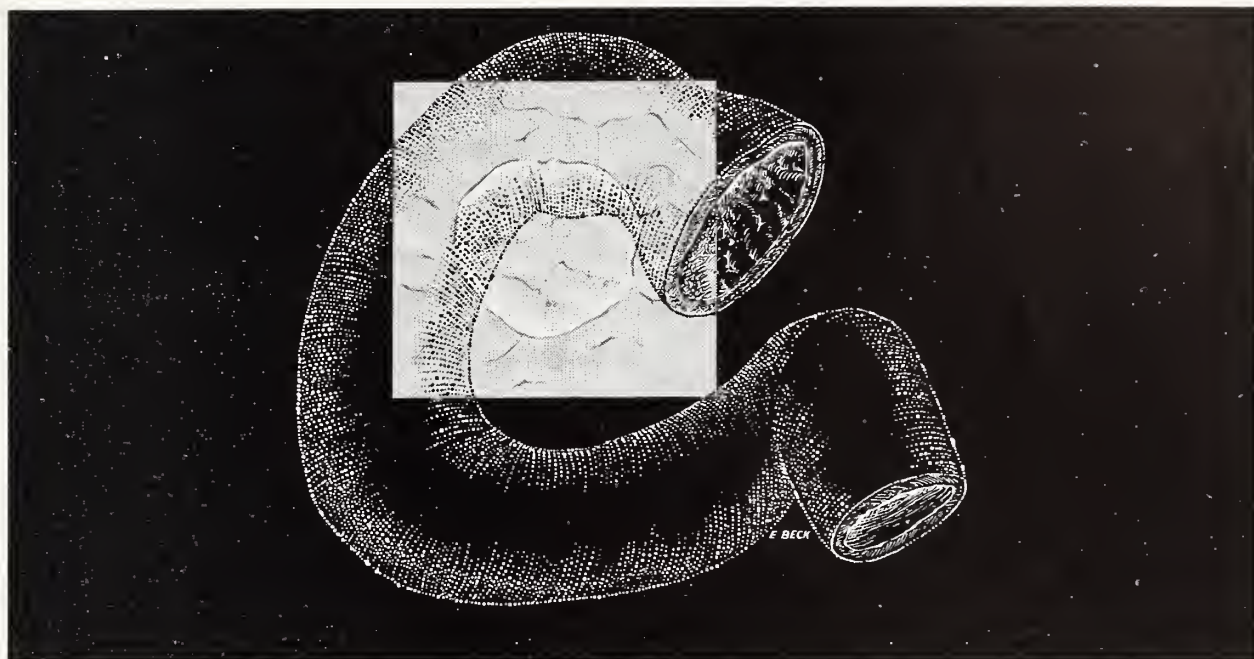
The thoughts expressed by Drs. Sternagel and Colbert are to the point. They place in sharp perspective the fundamental principle on which Blue Shield Plans

were organized and must continue to operate. And today, perhaps more than ever before, developments in the health prepayment field necessitate a dedication to the principle of physician control with renewed vigor.

What Dr. Sternagel and Dr. Colbert were saying is clearly and concisely the clue to Blue Shield progress. Their ideas are basic . . . for it is in fact the physician's leadership, guidance, and active participation that are fundamental to the principles and objectives Blue Shield Plans were organized to serve. It is obvious, therefore, that the degree to which the profession contributes to the development of Blue Shield is alone the factor determining the extent to which Blue Shield will *serve the profession and the public best*.

With its strong ties to the profession through local medical society sponsorship, Blue Shield Plans *can* fully serve both professional interests and the public's need for a satisfactory means to budget medical care costs. And over the years, active physician participation in the affairs of Blue Shield has been encouraged and earnestly sought for the reason that those who administer the Plans recognize that in matters of providing health care coverage, it is the physician's judgment, leadership, and counsel that must prevail. It is only under these conditions that health care coverage consistent with the values and traditions of American medicine can continue to flourish and serve the public fully.

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In a two-year study¹ by Lichstein and co-workers, documented by intensive personal observation and by follow-up studies, Pro-Banthine (brand of propantheline bromide) often brought immediate relief of ulcer pain. Patients (11 per cent) who did not respond satisfactorily to Pro-Banthine therapy had "anxiety manifestations of psychoneurotic proportions."

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These actions of Pro-Banthine and its demonstrated effectiveness in accelerating ul-

cer healing²⁻⁵ mark the drug as a most valuable adjunct in the treatment of peptic ulcer.

The suggested initial dosage is one 15-mg. tablet with meals and two tablets at bedtime. An increased dosage may be necessary for severe manifestations and then two or more tablets four times a day may be prescribed.

G. D. Searle & Co., Chicago 80, Illinois.
Research in the Service of Medicine.

1. Lichstein, J.; Morehouse, M. G., and Osmon, K. L.: *Am. J. M. Sc.* 232:156 (Aug.) 1956.

2. Sun, D. C. H., and Shay, H.: *Arch. Int. Med.* 97:442 (April) 1956.

3. Rafsky, H. A.; Fein, H. D.; Breslaw, L., and Rafsky, J. C.: *Gastroenterology* 27:21 (July) 1954.

4. Schwartz, I. R.; Lehman, E.; Ostrove, R., and Seibel, J. M.: *Gastroenterology* 25:416 (Nov.) 1953.

5. Silver, H. M.; Pucci, H., and Almy, T. P.: *New England J. Med.* 252:520 (March 31) 1955.

SEARLE

Necrology

CLARENCE EMERY, JR., M.D.

1902 - 1957

The tragic death of Clarence Emery, Jr., M.D., of Bangor, Maine, was reported June 8th by a relentless party of woodsmen, wardens and fellow physicians who had searched the Greenville area of Big Lyford Pond for four days following his disappearance while on a fishing trip with his brother Frederick Emery, M.D., and friends.

Dr. Emery, prominent obstetrician, was born at Manset, Maine, February 1, 1902, son of the late Reverend Clarence Emery and Addie Emery. He was educated at Higgins Classical Institute, Colby College, Jefferson Medical School and Harvard College.

Following graduation from medical school and after the completion of his internship at the Eastern Maine General Hospital, he began practice at Eastport, Maine, at the time of the original Passamaquoddy Tidal project. Following this he returned to Bangor, where after post-graduate study in obstetrics he established himself in his chosen specialty. Dr. Emery was a very capable obstetrician, of a quiet, pleasant and friendly nature. He soon built a very large obstetrical practice. He was held in high esteem by both his patients and fellow practitioners, and through the years of his practice applied himself unselfishly to the needs of his patients. In spite of his relative youth professionally and regrettably short span of years in practice, he had early in his professional life acquired the friendship and re-

spect of his fellow associates both at the Eastern Maine General Hospital and among the members of his county society.

He was a veteran of World War II having served with the Medical Division for four years, two of which were spent in Germany in an evacuation hospital. At the time of his discharge he held the rank of Lieutenant Colonel. He was awarded two Bronze Stars and was given three citations for bravery.

Dr. Emery was a member of the Ellsworth Baptist church; a 25-year member of the Masonic Lodge at Charleston and held membership in the American Medical Association, the Maine Medical Association and the Penobscot County Medical Association. He had been a member of the obstetrical staff at the Eastern Maine General Hospital for approximately 20 years and at the time of his death was a member of the hospital executive committee.

He is survived by his mother Mrs. Clarence Emery, Sr. of Lamoine; his widow, Charlotte G. Emery of Bangor; two sons, Clarence, 3rd, and Hiram, both of Bangor; two daughters, Mrs. Charlotte Edes, and Martha Emery, both of Bangor; a sister, Mrs. Isabel Higgins of Ellsworth; three brothers, Gordon, of Windber, Pennsylvania, Dr. Frederick of Bangor, Theodore of Bethel, and a grandson, Kenneth Edes of Bangor.

J. J. Pearson, M.D.

News and Notes

STATE OF MAINE

BOARD OF REGISTRATION OF MEDICINE

ADAM P. LEIGHTON, M.D., *Secretary*
142 HIGH STREET, PORTLAND, MAINE

Physicians Licensed to Practice Medicine and Surgery in the State of Maine

July 9 and 10, 1957

THROUGH EXAMINATION

Robert R. Armstrong, Jr., M.D., 263 State St., Bangor, Me.
Jacob Brauns, M.D., Belmont Terrace, Valley Forge Rd., Bridgeport, Pa.
Bernard B. Cohen, M.D., Fordham Hospital, Southern Blvd. & Crotona Ave., Bronx, N. Y.
Richard I. Clark, M.D., 858 Washington St., Bath, Me.
Lowell L. Davis, M.D., Elmhurst General Hospital, 79-01 Broadway, Elmhurst 73, N. Y.
Wilfred C. Harding, M.D., Fortunes Rocks, Biddeford, Me.

Henry Hecht, M.D., Augusta State Hospital, Augusta, Me.
Edward J. Hughes, Jr., M.D., 106 Webster Ave., Bangor, Me.
Earl R. Lee, M.D., Charlotte County Hospital, St. Stephen, N. B.

Antoine Martin, M.D., St. Leonard, N. B.
G. I. Podobnikar, M.D., 203 East 26th St., New York 10, N. Y.

Boris Vira, M.D., Fordham Hospital, Bronx, N. Y.
Edward Percy Williams, M.D., Linneus, Me.

THROUGH RECIPROCITY

John M. H. Barnard, M.D., 80 Highland Ave., Gardiner, Me.
Harold Bean, M.D., 25 Market Square, South Paris, Me.
Francis P. Campbell, M.D., Bellevue Hospital, New York 16, N. Y.
George O. Chase, M.D., USVA Hospital, Newington, Conn.
Arthur R. Clemett, M.D., Portland, Me.
Robert M. Knowles, M.D., 34 Linwood Drive, West Hartford, Conn.

Continued on Page 336

Tuberculosis Abstract

Bedrest is generally considered as a basic requirement of tuberculosis therapy. However, to the person casually reviewing the literature, it is easy to gain an erroneous impression that only the drugs are of use. The committee feels that a strong statement should be made reaffirming the importance of bedrest and its proved value in tuberculosis treatment, and that this statement should receive the widest possible attention. The committee wishes to reaffirm the desirability of always starting the patient's care in the Sanatorium for the purpose of indoctrination, evaluation of the clinical problem, and initiation of therapy.

Reference: *Subcommittee on Bedrest in Pulmonary Tuberculosis of the American College of Chest Physicians; Diseases of the Chest*, Page 720, June, 1957.

Philip Lazarus Levy, M.D., 1065 Jerome Ave., N. Y. 52, N. Y.
 Joseph E. Martin, M.D., Livermore Falls, Me.
 H. V. Mautner, M.D., Yarmouth, Me.
 Donald J. McCrann, M.D., 36 Woodland St., Hartford, Conn.
 James C. Neely, M.D., Children's Hospital, Cincinnati, Ohio.
 Francis R. O'Kane, M.D., Millinocket, Me.
 John Purney, M.D., 308 Main Street, Bristol, Conn.
 Blossom A. Sanger, M.D., 58 West Main St., Ellsworth, Me.
 Andrew E. Rudnai, M.D., 5120 MacArthur Blvd., Washington, D. C.
 Charles C. Verstandig, M.D., 128 Whitney Ave., New Haven, Conn.

Edwin T. Wyman, Jr., M.D., St. Luke's Hospital, 113th St. and Amsterdam Ave., New York 25, N. Y.
 The next examinations will be given at the City Hall, Portland, Maine, on November 12, 13, and 14, 1957.

American Board of Obstetrics and Gynecology

Frederick B. Lidstone, M.D., 117 Goff Street, Auburn, Maine, was certified by the American Board of Obstetrics and Gynecology on May 25, 1957.

Announcements

Maine Medical Center Postgraduate Educational Program in Anesthesiology*

Conducted by John R. Lincoln, M.D., Howard P. Sawyer, Jr., M.D., and Elio Baldini, M.D. at the Maine Medical Center in the House Officers Quarters from 1:00 to 2:00 p.m. on the following dates:

<i>Date</i>		<i>Topic</i>
1957		
October	11	Introduction to anesthesia
October	25	Fundamental principles of anesthesia
November	8	Preoperative evaluation and preparation
November	22	Barbiturate intoxication
December	6	Physiology of respiration (with motion pictures)
December	20	Cardiovascular physiology (with motion pictures)
1958		
January	3	Cardiovascular physiology (with motion pictures)
January	17	Vasopressors
January	31	Intravenous and inhalation anesthesia (with motion pictures)
February	14	Spinal anesthesia (with motion pictures)
February	28	Regional anesthesia and drugs (with motion pictures)
March	14	Oxygen therapy and resuscitation (with motion pictures)
March	28	Autonomic nervous system (with motion pictures)
April	11	Current concepts of shock

* Approved for credit by the American Academy of General Practice under category number 1 as set up by the Committee on Education.

All Physicians are cordially invited to attend.

American Academy of General Practice Maine Chapter

The annual meeting of the Maine Chapter, American Academy of General Practice will be held at St. Mary's Hospital, Lewiston, on Thursday, October 31st. The scientific session in the afternoon will be followed by dinner and a dance in the evening. All Maine physicians are invited.

New England Postgraduate Assembly

November 5, 6 and 7, 1957
 Hotel Statler, Boston

PRACTICAL COURSES
 FOR PRACTICING PHYSICIANS
 Hospital Clinics in Boston Hospitals
 Panel Discussions
 Luncheon Symposia
 Clinical-Pathological Conferences
 Lectures
 Medical Films
 Exhibits
 Ladies' Program
 Dinner Dance and Entertainment

Open to all physicians. Registration fee: \$10. All physicians in New England shall receive an advance program. For further information write: Dr. Earle M. Chapman, *Chairman*, New England Postgraduate Assembly, 22 Fenway, Boston 15, Mass.

The Assembly is sponsored by the Massachusetts Medical Society in cooperation with the State Medical Societies of Maine, New Hampshire, Vermont, Connecticut and Rhode Island.

Department of Health and Welfare Services for Crippled Children

ORTHOPEDIC CLINICS

PORTLAND — MAINE MEDICAL CENTER
 9:00 a.m. October 14, November 4, December 9.
 LEWISTON — CENTRAL MAINE GENERAL HOSPITAL
 9:00 a.m. October 18, November 15, December 20.
 RUMFORD — COMMUNITY HOSPITAL
 1:30 p.m. December 18.
 WATERTOWN — THAYER HOSPITAL
 1:30 p.m. October 24.
 ROCKLAND — KNOX COUNTY HOSPITAL
 1:30 p.m. November 20 (Wednesday).
 MACHIAS — NORMAL SCHOOL
 1:30 p.m. October 9.
 PRESQUE ISLE — NORTHERN MAINE SANATORIUM
 9:00 a.m. and 12:30 p.m. November 6.
 HOULTON — AROOSTOOK GENERAL HOSPITAL
 9:00 a.m. November 5.

*BANGOR — EASTERN MAINE GENERAL HOSPITAL
1:00 p.m. November 21.
AUGUSTA — AUGUSTA GENERAL HOSPITAL
1:00 p.m. December 26.

CARDIAC CLINICS

PORTLAND — MAINE MEDICAL CENTER
9:00 a.m. Every Friday (Holidays excepted).
BANGOR — EASTERN MAINE GENERAL HOSPITAL
9:00 a.m. October 11-25, November 8-22, December 13-27.

CLEFT PALATE EVALUATION CLINICS

PORTLAND — MAINE MEDICAL CENTER
10:00 a.m. November 19.

Division of Maternal and Child Health

PEDIATRIC CLINICS

*BANGOR — EASTERN MAINE GENERAL HOSPITAL
1:30 p.m. October 25, November 22, December 27.
*FORT KENT — PEOPLES BENEVOLENT HOSPITAL
10:00 a.m. November 20.
*WATERVILLE — THAYER HOSPITAL
1:30 p.m. October 1, November 5, December 3.

*Several of the Pediatric Clinics, and also Bangor CC Clinics, will be two-session clinics.

ADDITIONAL CLINICS WILL BE ANNOUNCED LATER.

By Appointment Only

Pineland Hospital and Training Center Pownal, Maine

Carl Hedin General Hospital — Red Room

October 2	Lecture — "Other genetically determined diseases of the central nervous system"	10:45 A.M.
October 9	Lecture — "Phenylketonuria"	10:45 A.M.
October 16	Lecture — "Muscle Diseases"	10:45 A.M.
October 23	Lecture — "Diffuse Brain Diseases and Malformations"	10:45 A.M.
October 30	Lecture — "Mongolism and cretinism"	10:45 A.M.
October 31	Clinical Pathological Conference — Death Review and Microscopic Demonstration	11:00 A.M.

Pediatric Institute for the General Practitioner

FRIDAY, SEPTEMBER 20, 1957
at
COLBY COLLEGE, WATERVILLE

Under the Sponsorship of
THE DIVISION OF MATERNAL AND CHILD HEALTH,
MAINE DEPARTMENT OF HEALTH AND WELFARE
endorsed by the
MAINE MEDICAL ASSOCIATION
The subject will be "The Mentally Retarded Child."

New York University-Bellevue Medical Center Post-Graduate Medical School

Post-graduate courses to be given or started
during the months of October and November:

DEPARTMENT OF ANESTHESIOLOGY

Electrocardiography for Anesthesiologists — A full-time course, October 7 through 11, 1957. Under the direction of Dr. Raphael W. Robertazzi and Dr. J. Scott Butterworth of the Department of Medicine. Maximum class 25. Tuition \$85.00.

DEPARTMENT OF DERMATOLOGY AND SYPHILOLOGY

Dermatology and Syphilology (Designed for Pediatricians) — A full-time review course, October 7 through 11, 1957. Under the direction of Professor Marion B. Sulzberger. Tuition \$85.00.

DEPARTMENT OF INDUSTRIAL MEDICINE

Medical Aspects of Workmen's Compensation — A one-week course, October 21 through 25, 1957. Tuition \$45.00.

DEPARTMENT OF MEDICINE

Allergy — A full-time course, October 14 through November 1, 1957. Under the direction of Dr. Abner M. Fuchs. Maximum class 12. Tuition \$250.00.

Asculation of the Heart — A full-time course, October 14 through 16, 1957. Under the direction of Dr. J. Scott Butterworth. Tuition \$55.00.

Cardiac Roentgenology — A full-time course, October 17 through 18, 1957. Under the direction of Dr. J. Scott Butterworth. Tuition \$35.00.

Clinical Gastroenterology — A full-time course, October 28 through November 1, 1957. Under the direction of Dr. James Tesler. Tuition \$75.00.

Problems in Clinical Medicine — A part-time course, 9 a.m. to 12 noon, Fridays, November 1 through April 25.

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Under the direction of Dr. Jack Nelson. Tuition \$75.00.

Fundamentals of Clinical Electrocardiographic Interpretation — A part-time course of sixteen sessions, 7 to 9 p.m., Wednesdays, November 6 through March 5. Under the direction of Dr. J. Marion Bryant. Tuition \$50.00.

Arthritis and Allied Rheumatic Disorders — A full-time course, November 11 through 15. Under the direction of Dr. Edward F. Hartung. Tuition \$85.00.

Electrocardiography — A full-time course, November 11 through 15. Under the direction of Dr. J. Scott Butterworth. Tuition \$85.00.

This course is repeated, March 17 through 21, 1958.

Hematology — A full-time course, November 11 through 15. Under the direction of Dr. Leo Weiner. Tuition \$85.00.

Diabetes Mellitus, Hyperinsulinism, and Hypoglycemia — A full-time course, November 11 through 13. Under the direction of Dr. Benjamin I. Ashe. Tuition \$40.00.

Peripheral Vascular Diseases — A full-time course, November 18 through 22. Under the direction of Dr. A. Wilbur Duryee. Tuition \$55.00.

DEPARTMENT OF NEUROSURGERY

Acute Neurological Problems of General Practice — A full-time course, October 14 through 18, 1957. Under the direction of Professor Thomas I. Hoen. Maximum class 20. Tuition \$125.00.

Electroencephalography — A part-time course, 6 to 7:30 p.m., Mondays, October 7 through November 25, 1957. Under the direction of Dr. George M. Burlo. Tuition \$35.00.

The Intervertebral Disc — A full-time course, October 10 and 11, 1957. Under the direction of Professor Thomas I. Hoen. Maximum class 10. Tuition \$50.00.

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

Gynecological Cytology (for specialists) — A part-time course, 12 noon to 1 p.m., Tuesdays, and 9 a.m. to 12 noon, Thursdays, October 1 through November 26, 1957. Under the

direction of Dr. Emanuel L. Hecht. Maximum class 6. Tuition \$100.00.

X-Ray Diagnosis in Obstetrics and Gynecology — A full-time course, October 21 through 25, 1957. Under the direction of Dr. Robert Berman and Dr. Arthur Weinberg of the Department of Radiology. Tuition \$85.00.

Gynecological Endocrinology — A full-time course, October 7 through 11, 1957. Under the direction of Dr. Herbert S. Kupperman of the Department of Medicine, with the assistance of Dr. Jeanne Epstein and Dr. Raymond P. Nolan. Maximum class 10. Tuition \$125.00.

Culdoscopy — The course consists of three two-hour periods, 1 to 3 p.m., Monday, Wednesday, and Friday, November 25 through 29. Under the direction of Dr. Wayne H. Decker. Tuition \$55.00.

This course is repeated January 27 through 31, and April 28 through May 2, 1958.

DEPARTMENT OF OPHTHALMOLOGY

Ophthalmoscopy — A part-time course, 9 a.m. to 12 noon, November 4 through 8. Under the direction of Dr. George N. Wise. Tuition \$55.00.

DEPARTMENT OF ORTHOPEDIC SURGERY


Orthopedics for the General Practitioner — A part-time course, 3 to 5 p.m., Tuesdays, October 8 through December 3, 1957. Under the direction of Dr. Harvey P. Kopell. Maximum class 20. Tuition \$45.00.

Orthopedic Aspects of the Treatment of Rheumatic Disorders — A part-time course, Wednesdays, 4 to 6 p.m., October 9 through December 11, 1957. Under the direction of Dr. Robert L. Preston. Maximum class 20. Tuition \$50.00.


DEPARTMENT OF OTORHINOLARYNGOLOGY

Endaural Surgery — A full-time course, November 4 through 16. Under the direction of Professor John F. Daly. Tuition \$250.00.


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Hyoscyamine Sulfate	0.031 mg.
plus	
Propenpyridamine Maleate	12.5 mg.
Phenylephrine Hydrochloride	10.0 mg.

This course is repeated, January 27 through February 7, 1958.

DEPARTMENT OF PATHOLOGY

Histopathology for Gynecologists — A part-time course, 7:30 to 8:30 p.m., Tuesdays and Fridays, October 1 through November 22, 1957. Given at Lenox Hill Hospital under the direction of Dr. Rudolf M. Paltauf of the Department of Forensic Medicine. Minimum class 3; maximum 12. Tuition \$75.00.

DEPARTMENT OF PEDIATRICS

Clinical Pediatric Cardiology — A half-day course, 9 a.m. to 12 m., Wednesdays, October 16 through December 18, 1957. Under the direction of Dr. Martin M. Maliner. Maximum class 8. Tuition \$50.00.

Pediatric Allergy — A half-day course, 9 a.m. to 12 m., Tuesdays, October 1 through December 17, 1957. Under the direction of Dr. Robert Chobot. Maximum class 12. Tuition \$75.00.

Review of Clinical Pediatrics — A full-time course, November 18 through 23. Under the direction of Professor Adolph G. De Sanctis. Tuition \$55.00.

This course is repeated, February 17 through 22, 1958.

Pediatric Endocrinology and Related Metabolism — A four-day course, 9 a.m. to 4 p.m., November 11 through 14. Under the direction of Dr. Beatrice Bergman and Dr. Herbert S. Kupperman of the Department of Medicine. Tuition \$85.00.

DEPARTMENT OF PHYSIOLOGY

Biochemistry and Physiology in Disease: Laboratory Diagnosis — A part-time course, 2:30 to 4:30, Tuesdays, October 1 through November 26, 1957. Under the direction of Dr. H. Gershberg. Tuition \$50.00.

DEPARTMENT OF RADIOLOGY

Clinical Radiation Therapy — A part-time course, October

2, 1957 through January 29, 1958. Under the direction of Dr. Sidney Rubinfeld. Tuition \$100.00.

DEPARTMENT OF SURGERY

Review of General Surgery (for specialists) — A full-time course, October 21 through November 16, 1957. Under the direction of Professor J. William Hinton. Maximum class 20. Tuition \$300.00.

(For further information write:

Associate Dean—550 First Avenue, New York 16, New York)

American Urological Association

The American Urological Association offers an annual award of \$1000 (first prize of \$500, second prize \$300 and third prize \$200) for essays on the result of some clinical or laboratory research in Urology. Competition shall be limited to urologists who have been graduated not more than ten years, and to hospital internes and residents doing research work in Urology.

The first prize essay will appear on the program of the forthcoming meeting of the American Urological Association, to be held at the Roosevelt Hotel, New Orleans, Louisiana, April 28-May 1, 1958.

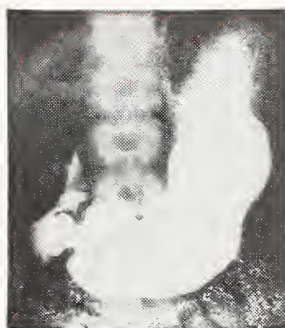
For full particulars write the Executive Secretary, William P. Didusch, 1120 North Charles Street, Baltimore, Maryland. Essays must be in his hands before December 1, 1957.

Cameron Parish Medical Rehabilitation Fund

Members who have not already made contributions to the Cameron Parish Medical Rehabilitation Fund are urged to

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send checks at once. The fund was established by the Louisiana State Medical Society to provide financial assistance to three young physicians who lost their homes and offices while rendering emergency medical care to the citizens of Cameron Parish during Hurricane Audrey. It is hoped that the fund will speed reconstruction of the offices of Dr. C. W. Clark of Cameron and Drs. S. E. Carter and G. W. Dix of Creole and thereby restore normal medical service to people of the storm-ravaged area. The fund was established as a tribute to all physicians of the area who performed in the best traditions of the profession during and after the hurricane. Send your check today to: CAMERON PARISH MEDICAL REHABILITATION FUND, c/o Louisiana State Medical Society, Room 105, 1430 Tulane Avenue, New Orleans 12, La.

Fourth Bahamas Medical Conference

This Conference will be held at the Fort Montagu Beach Hotel, Nassau, December 1-15, 1957. For more information

write: B. L. Frank, M. D., 1290 Pine Avenue West, Montreal, Canada. Hotel reservations should be made by writing directly to: Mr. John L. Cota, General Manager, Fort Montagu Beach Hotel, Nassau, Bahamas. (A ten-cent air mail stamp is required for a letter.)

New York Academy of Medicine

"Research Contributions To Clinical Practice" is the subject for postgraduate week of the New York Academy of Medicine, October 7 to 11, 1957. The program has been arranged by the Committee on Medical Education of the Academy, 2 East 103rd Street, New York City.

National Society for Crippled Children and Adults

The annual convention will be October 31 to November 2, at the Palmer House, Chicago. For information write: Catharine Bauer, 11 S. LaSalle Street, Chicago 3.

Woman's Auxiliary to the Maine Medical Association

DOCTORS' WIVES ARE DIFFERENT

Each shares with her husband the responsibility of keeping informed about the problems and policies of the medical profession — for serving as a community leader — and for earning a "special" position of respect for physicians individually and as a group.

That's quite an assignment — one which wives of men in other fields are rarely given. Fortunately, there's a special tool to help you do the job — as an individual doctor's wife

and as a member of the Woman's Auxiliary. What is it? It is your publication, especially published for you, and official voice of the Woman's Auxiliary to the A.M.A.—the Bulletin!

EXECUTIVE BOARD MEETING

The Executive Board Meeting of the Woman's Auxiliary to the Maine Medical Association will be held at 10:30 A.M. on Wednesday, October 30th at the Augusta Country Club. Luncheon will follow the meeting.

Thirst, too, seeks quality



Officers of the Maine Medical Association
1957-1958

President, FRANCIS A. WINCHENBACH, M.D., Bath
President-elect, EUGENE E. O'DONNELL, M.D., Portland

<i>Councilors</i>	<i>District</i>	<i>Term Expires</i>
CARL E. RICHARDS, M.D., Sanford	First District; Cumberland, York	1960
JAMES A. MACDOUGALL, M.D., Rumford	Second District; Androscoggin, Franklin, Oxford	1960
ROBERT L. ALLEN, M.D., Rockland	Third District; Knox, Lincoln-Sagadahoc	1959
WILSON H. MCWETHY, M.D., Augusta	Fourth District; Kennebec, Somerset, Waldo	1959
RAYMOND E. WEYMOUTH, M.D., Bar Harbor	Fifth District; Hancock, Washington	1958
ALLAN WOODCOCK, M.D., Bangor	Sixth District; Aroostook, Penobscot Piscataquis	1958
PHILIP P. THOMPSON, JR., M.D., Portland	<i>Delegate to the American Medical Association</i>	Jan. 1, 1959
ARMAND ALBERT, M.D., Van Buren	<i>Immediate Past President</i>	

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Executive Director, DANIEL F. HANLEY, M.D., Brunswick
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The Journal of The Maine Medical Association

Published monthly at Brunswick, Maine, under the direction of the Council
DANIEL F. HANLEY, M.D., Editor
ESTHER M. KENNARD, Business Manager

The JOURNAL assumes no responsibility for opinions and statements of contributors. All copy, original articles, case reports, etc., will be submitted for publication typewritten on standard size paper and double spaced. Proof sheets furnished author on request. Address, Brunswick, Maine.

Reprints

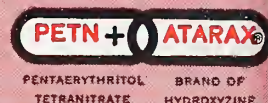
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I. Russek, H. I.: J. Am. Geriat. Soc. 4:877 (Sept.) 1956.

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Problems In Diagnosis Of Early Renal Lesions

PLATT R. POWELL, M.D.*

In Urology it is usually possible, if definite pathological changes exist, to establish a clear-cut diagnosis. Lack of patient cooperation may preclude complete examination or the physician may, because of minimal symptoms or incorrect diagnosis, fail to delve deeply enough to find the right answer. There are, however, a number of cases in which adequate history, physical examination, laboratory studies, x-rays and cystoscopic procedures are carried out and the kidney rests in your hand at the operating table with no diagnosis obvious. It is in regard to this latter group that I address you.

In the following three cases, the presenting symptom was hematuria. The pyelograms, either intravenous, retrograde or both, were inconclusive. The kidney or ureter from which bleeding occurred had been established. The suspected kidney was explored and appeared grossly normal except for a known hydronephrosis in one instance.

The first patient was a 68-year-old farmer, admitted to the Mary Fletcher Hospital on May 31, 1950 with a

nine-month history of recurrent hematuria and pain in the left flank. In the 2-3 months prior to admission, he had had almost daily hematuria. On examination, there was distinct left costo-vertebral angle tenderness, and moderate, benign enlargement of the prostate gland. His red blood cell count was 3.8 million with 12 grams of hemoglobin and a normal white count and differential. Urine was grossly bloody and without associated pyuria, casts of bacteria. NPN was 37 mg. Intravenous pyelograms were taken the day following admission and the next day cystoscopy was performed. At the time of the cystoscopy, urine had cleared somewhat. A urine specimen from the left kidney showed 4 to 6 RBC. Intravenous and retrograde pyelograms showed a failure of filling of the upper calyces on the left and the middle calyces appeared to be slightly depressed. The prostate was enlarged with some evidence of obstruction but no varices accountable for the bleeding were seen. A diagnosis of probable left kidney tumor was made and exploration advised. One week after admission the left kidney and ureter were explored and appeared grossly normal. The renal pelvis was then opened and a #21 Panendoscope was introduced. Visualization of the pelvis and major calyces

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FIG. 1. Pyelogram Case #1

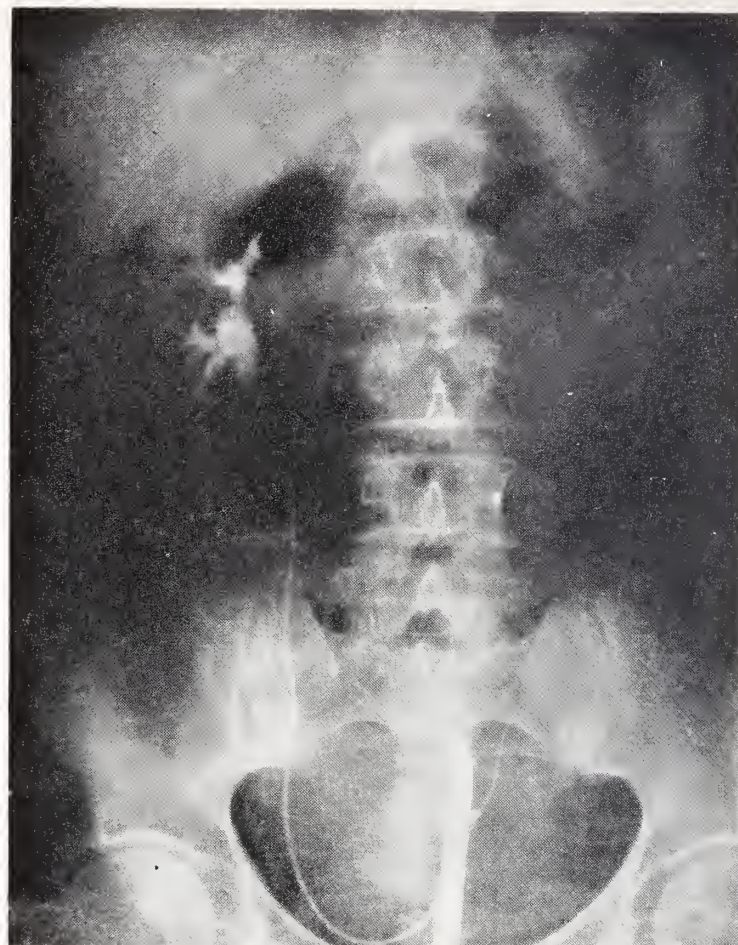


FIG. 2. Pyelogram Case #2

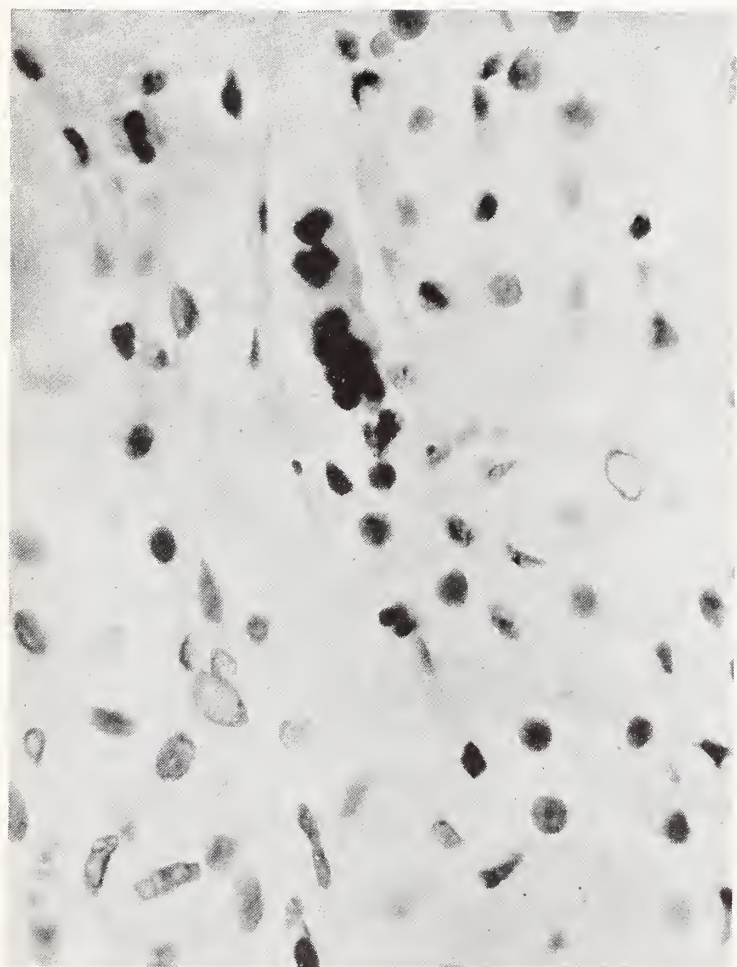


FIG. 3. Section showing type of cells seen in Papanicolaou smear, Case #2

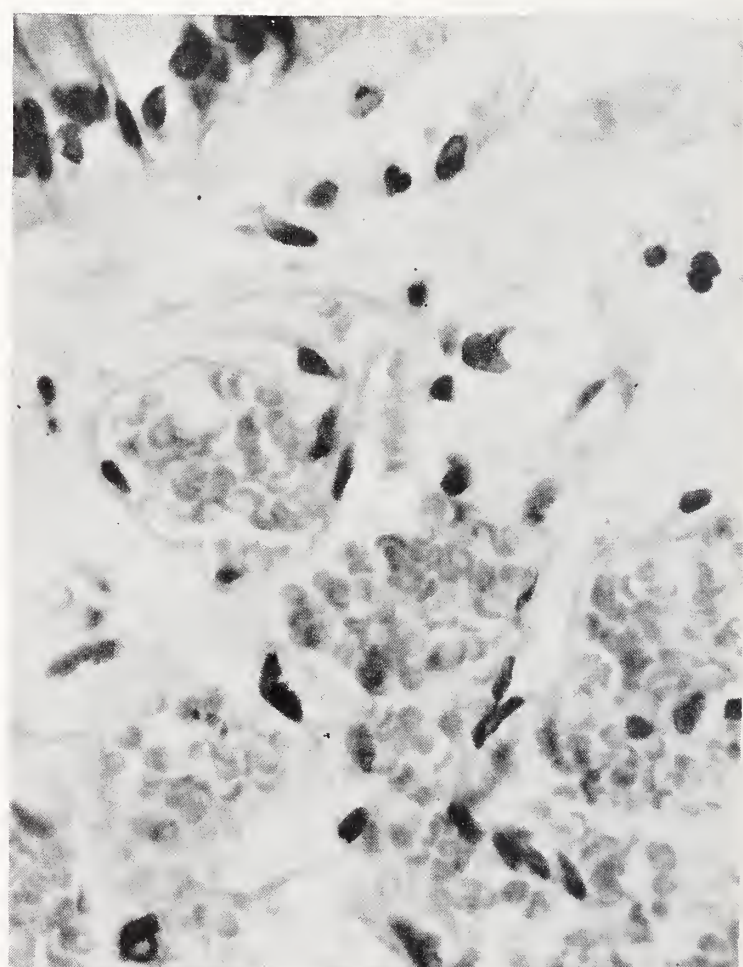


FIG. 4. Section through hemangioma, Case #2

was quite good and no source of bleeding or evidence of tumor could be found. The pelvis was closed, kidney suspended and the wound closed. The patient was seen on three or four occasions following recovery from operation. Papanicolaou smears and cultures for tuberculosis were negative and in October of 1950 he had a recurrence of bleeding. Cystoscopy at that time revealed bleeding from the right kidney. Pyelograms appeared normal on the right and showed improved filling of the superior calyx on the left. The patient was advised to return for periodic follow-up.

The second patient was a 60-year-old store-keeper, admitted with a three-week history of hematuria, right costo-vertebral angle tenderness and hematuria proved on cystoscopy to be coming from the right kidney. Retrograde pyelograms showed a slight deformity of a minor calyx arising from the superior major calyx. Papanicolaou smears from the right kidney were reported as positive for malignancy. Smears for tuberculosis were negative and there was no associated pyuria. Exploration was carried out and a normal appearing kidney and ureter were found. The kidney pelvis was opened and endoscopy performed. This was not as satisfactory as in the previous case because of visual difficulties resulting from the persistence of renal bleeding. However, no visible tumor could be seen. Despite the absence of visible tumor, in the presence of persistent bleeding, positive "Pap" smears and a slight pyelographic defect, I elected to remove the kidney. On opening the specimens in the Pathology Laboratory, the only positive finding, grossly, was a blood clot adherent to the papilla of a superior minor calyx. Multiple parallel sections were taken through the papilla and revealed a cavernous hemangioma covered by a layer of columnar epithelium with hyperchromatic nuclei at the base.

The third case was that of a 69-year-old female, a rather severe cardiac, who was admitted to the Mary Fletcher Hospital on December 19, 1950, with hematuria of three days' duration. Physical examination revealed a questionably enlarged right kidney. Intravenous pyelograms showed a hydronephrotic right kidney with apparent uretero-pelvic obstruction. Bleeding had stopped at the time of cystoscopy but a turbid hydronephrotic drip was obtained from the right kidney which showed only 3 to 4 RBC perHPF and many WBC with E.coli. I felt that the hematuria was probably on a basis of a pyelonephritis, associated with the right hydronephrosis. The patient was treated with Gantrisin® and the pyuria improved. However, in the succeeding months, microscopic hematuria associated with a mild pyuria persisted, and repeated Papanicolaou smears were positive from the right kidney. We had been hesitant to operate upon this patient because of her cardiac status but in view of the "Pap" smears, in the presence of a badly damaged right kidney, nephrectomy was planned. Grossly the kidney showed no evidence of tumor although the pelvis was consider-



FIG. 5. Pyelogram in Case #3

ably dilated and the renal parenchyma was thinned. The mucosa of the renal pelvis appeared hemorrhagic and there were some patchy areas which exhibited a granular appearance. Microscopic examination of this latter area revealed the epithelium to be markedly anaplastic. A diagnosis of transitional cell carcinoma in situ of the renal pelvis was made.

DISCUSSION

It is not my intent in presenting these cases, to dwell at any length on the fine points in differential diagnosis of upper urinary tract bleeding. However, the following is a brief outline of possible sources to consider when the solution is obscure:

1. Infection; such as: chronic papillitis, hemorrhagic pyelonephritis, early tuberculosis.
2. Vascular lesions, such as: varices, and angiomas.
3. Calculi and in the type of cases discussed, small low opacity or non-opaque stones should be considered.
4. Carcinoma with early transitional cell or renal cell tumors are possible sources.
5. Nephritides with emphasis on toxic nephritides such as those due to Carbon Tetrachloride. In children, glomerular nephritis.
6. Extra-renal sources as in blood dyscrasias, Dicumarol®, etc.

My particular interest in these cases is concerned with the future possibilities of pyeloscopy, visualization

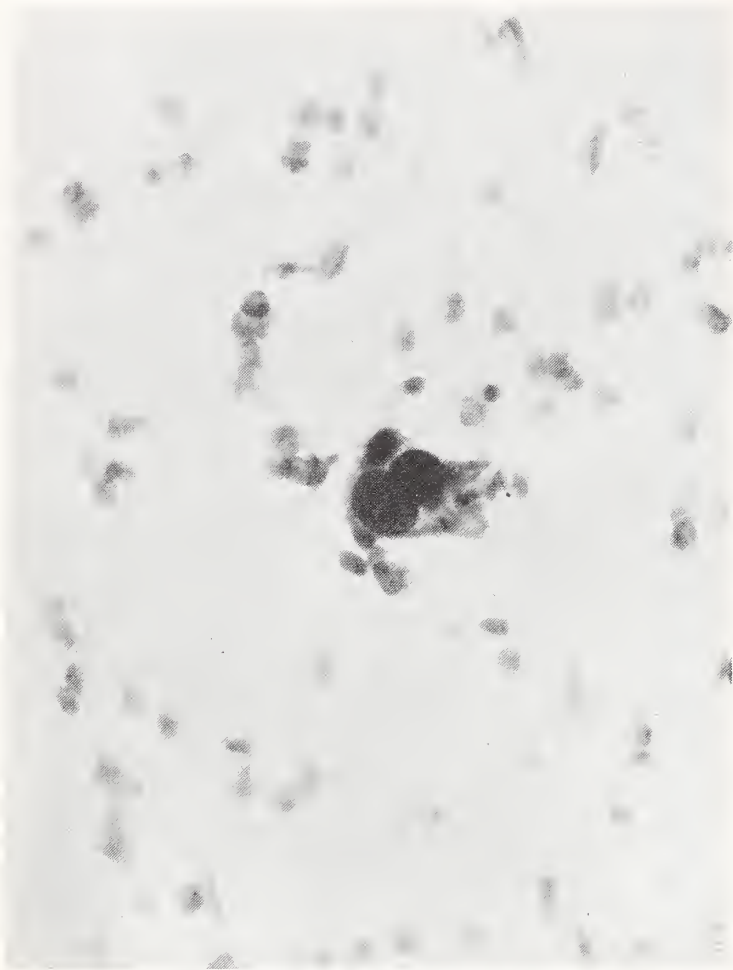


FIG. 6. Papanicolaou smears in Case #3

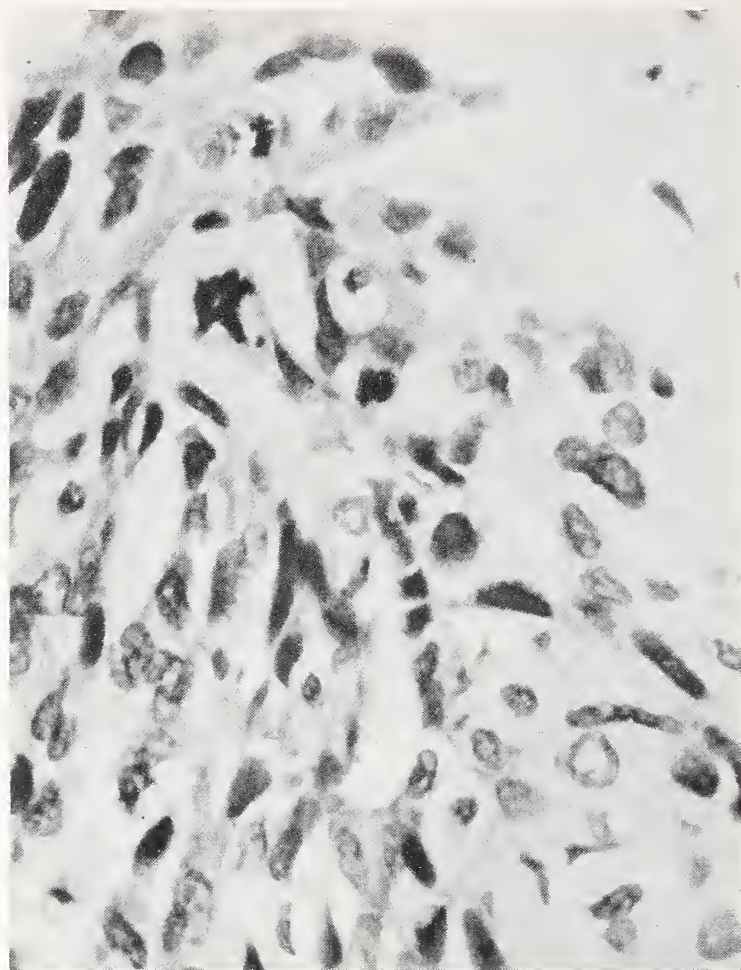


FIG. 7. Section from renal pelvis in Case #3

of the renal collecting system. I realize that this subject is one of very little interest to a group of doctors composed of few urologists, but I would like just briefly, to mention the value of this relatively new diagnostic and therapeutic aid in the field of Urology. To my knowledge, no attempt at pyeloscopy or nephroscopy has been given much attention, until the past ten years, when Dr. Leadbetter, of the Massachusetts General Hospital, and Dr. Trattner, from the Middle West, published articles on the subject and presented instruments for its accomplishment. Mechanically it is a difficult problem to maneuver the instrument sufficiently to observe all parts of the calyceal system. It requires either a kidney with a long pedicle or an instrument which permits visualization about a thirty to one hundred and twenty degree angle. The instrument devised by Dr. Leadbetter is a rigid instrument with a ninety degree angle and should be far superior to anything presently available. There is only just one model, an experimental one, and he has it. It would be my impression that an endoscope developed along the lines of the new flexible gastroscope would best fit the bill and I have recently written to Mr. Wallace of the American Cystoscope Makers, regarding the technical possibilities of such an instrument.

The particular use of such an instrument is quite

limited but in a few isolated cases, it might well be the only answer to the problem. In the second case presented today, with proper instrument for pyeloscopy, local fulguration of the lesion might have permitted salvage of the involved kidney. Certainly this assumes tremendous importance if the other kidney happens to be missing or inadequate to support life, as occasionally happens.

SUMMARY

Three cases of hematuria, presenting difficult diagnostic and therapeutic problems have been presented and their management outlined. The possibilities of renal endoscopy have been discussed. I would like in closing to note that nephrectomy should be considered in these early lesions only after repeated positive smears, reported by a well qualified pathologist. Uncontrollable renal bleeding occasionally necessitates nephrectomy, and at times it is wiser to explore a doubtful kidney lesion and close up if no pathological diagnosis is found.

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233 Pearl Street, Burlington, Vermont

The Treatment Of Chronic Peptic Ulcer With DL-Methionine

Results In Fifty-Four Patients

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Ever since Claude Bernard demonstrated that the intact leg of the living frog will be digested when introduced into the dog's stomach through an external gastric fistula, men have wondered at the ability of the stomach itself to resist the action of gastric juice. A diminished resistance of the gastroduodenal mucosa to autodigestion is widely believed to be of major importance in the etiology of peptic ulcer.

In 1860 Harley, a contemporary of Claude Bernard, theorized that gastric epithelium is protected from autodigestion by a protective layer of gastric mucus. This belief has been widely held since his time; and although it has been repeatedly suggested that a qualitative or quantitative deficiency of gastric mucin was present in peptic ulcer, direct evidence of such a defect has never been presented. The effectiveness of gastric mucin in protecting against peptic digestion has been variously explained as being due to its presence as a viscous, tenacious, mechanical barrier, its capacity to neutralize and buffer acid, and its antipeptic activity.^(1,2) That gastric mucin exhibits this characteristic protectiveness while still in an intracellular state is also a possibility. The theory that a relative deficiency in mucous secretion was related to peptic ulcer led to the use of gastric mucin as a therapeutic agent by Fogelson,⁽³⁾ and Kim and Ivy.⁽⁴⁾ The antipeptic activities of gastric mucin were studied by Babkin and Komarov^(5,6) and were later found to be due to its constituent mucoitin sulfuric acid.⁽⁷⁾ As sulfur in the inorganic form cannot be used in the construction of body protein and as for all practical purposes the body is dependent upon the two amino acids cysteine and methionine for its supply of sulfur, it follows that a constant source of protein sulfur must be available for normal cellular activity by the mucus-secreting epithelium of the stomach and intestinal tract. This point, together with certain theoretical relationships between proteins⁽⁸⁻¹³⁾ and sulfur amino acids⁽¹⁴⁻²⁰⁾ and wound healing suggested this empirical study on methionine in peptic ulcer.

Sulfur amino acids are essential building blocks of body protein, and they are essential to normal liver

function. The demand for methionine for other than lipotropic purposes is increased during growth and when the cysteine content of the diet is low. A normal diet provides daily from 2 to 4 gm. of methionine.⁽²⁷⁾ If however, there should be interference with protein digestion, the work of Chaikoff and his colleagues suggests that inadequate amounts of methionine may be liberated. Rose has found the minimum daily requirements of methionine to be 1.1 gm.⁽²⁸⁾ The recommended daily intake of this essential substance for the normal adult is 2.2 gm. The minimum requirements of the essential amino acids including methionine in various disease states are at the present unknown, and the determination of the optimum intake of methionine for the purpose of treating peptic ulcer has been made on an empirical basis. In the prevention of chloroform liver injury in experimental animals^(29,30,31,32) relatively large quantities of methionine were used. In the treatment of parenchymal liver disease in humans from 6 to 9 gm. per day has been considered advisable.^(27,32,33,34) Three to 6 gm. of methionine is usually given in order to supplement the methionine and cysteine present in the diet. Kinsell⁽³⁵⁾ has shown that in instances of severe liver damage there is deficient utilization of amino acids with increasing levels of unmetabolized amino acids in the plasma. He has found that supplemental doses of as much as 9 gm. of dl-methionine per day may aggravate the toxemia of the disease. Less than this amount of methionine has been used experimentally as well as therapeutically in an attempt to improve wound healing following wounds and severe burns. In this study from 3 to 6 gm. of dl-methionine were given daily in divided doses, usually with or immediately after meals. Dried brewer's yeast of from 30 to 90 gm. per day was also given. In some patients a single daily maintenance vitamin capsule was prescribed in place of the brewer's yeast.

Since November of 1951, 90 unselected cases with chronic peptic ulcer have been started on this program. These cases were divided into two groups: (1) those who were given methionine preoperatively only, in an attempt to see if a favorable effect could be obtained on the healing of ulcers prior to surgery; and (2) a somewhat larger group of those who received medical treatment with methionine in an attempt either to

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prevent or to diminish the number of recurrences. All 90 patients had been hospitalized because of severe exacerbations of their disease. Thirty-six patients out of the total of 90 have been omitted from this study as they had either received medication for less than 2½ weeks of therapy prior to subtotal gastrectomy (group 1, 10 cases) or because therapy of duodenal ulcer with methionine was carried out with a follow-up period of less than 3 months (group 2, 26 cases). Two patients were omitted from this study as they were uncooperative. None of these 36 patients were omitted because of continued intractable symptoms. The remaining 54 patients form the basis of the present study.

Results of Study. Group 1 (surgical group). This group consisted of 18 patients with intractable peptic ulcer in whom definitive surgery for cure of their disease had been recommended through the medium of a combined medical-surgical gastroenterological conference. Thirteen of these patients had duodenal ulcer, three had marginal gastrojejunal ulcers, and two had prepyloric gastric ulcers. All were experiencing characteristic ulcer distress at the time of the start of their treatment. Subtotal gastrectomy was carried out in 16 patients, and in each instance the ulcer site was successfully removed and submitted for pathological study. In 15 cases the ulcers were found to be healed on microscopic study, and in one case the ulcer crater was found to have remained active (table #1). Healing took place in two of the three patients with gastrojejunal ulcer. In two patients, N. L. and W. L., clinical observation and treatment were protracted over a period of many weeks for personal reasons on the part of the patient and because of the treatment of unrelated medical conditions.

The second group consisted of 36 patients who were given methionine by mouth for purposes of long-term therapy (table #2). In some of these patients treatment was started immediately after admission to the hospital, and in the remainder therapy with methionine was initiated at the time of discharge. Follow-up studies were generally carried out at from 3- to 6-month intervals. Thirty-two of these patients had duodenal ulcer, one had both a duodenal and a marginal gastrojejunal ulcer, two had prepyloric gastric ulcers, and one had multiple gastric ulcers in the cardia and fundus. X-ray evidence of disease was manifested by the presence of a duodenal ulcer niche in 19 cases, and the presence of a deformed, tender duodenal cap in 12 cases. In one patient X-ray examination showed only low-grade obstruction. In another patient X-ray examination was negative although there was epigastric tenderness and a strong clinical history of active disease. On a previous hospital admission an X-ray study had shown evidence of peptic ulcer. In one of the three patients with gastric ulcer diagnosis was established on gastroscopy, and in the second patient prepyloric ulcer niche was demonstrated by both gastroscopy and X-ray examination. In the third patient confirmation of a prepyloric ulcer, now healed, was made at autopsy. Gastric-ulcer healing

took place in these three patients in 19, 22, and 45 days respectively. They did not receive long-term therapy. In the 33 patients with duodenal ulcer, results of therapy have been considered good in 23 and poor in 10. In seven patients disappearance of the ulcer niche was observed by X-ray examination in from 13 to 41 days (mean 20). X-rays were taken during the course of follow-up in 22 patients, and in 14 patients these studies were negative for the presence of an ulcer niche or other evidences of continued activity. In eight patients repeat X-ray studies showed evidence of continued activity. A niche was demonstrated in one, continued evidence of obstruction in another, and a deformed, tender cap in six. In 11 patients repeat X-ray studies were not obtained. Eleven out of the group of 33 have had more than two years of continuous therapy, and one patient has had continuous therapy for more than four years. Only one of the 11 is still symptomatic. All patients have been seen in follow-up examination on at least one occasion three months following the onset of treatment.

REPRESENTATIVE CASE REPORTS

Case No. 1 (group 1), C.E.J., a 47-year-old railway mail clerk, was admitted to Togus Veterans Administration Hospital on March 9, 1953, with a 12-year history of peptic-ulcer symptoms. During this period he had been hospitalized on four separate occasions: once for acute perforation of an anterior-wall duodenal ulcer; once for a "pinpoint" perforation, which was treated conservatively with nothing by mouth, Wagensteen drainage, and antibiotics; and on two other occasions because of severe epigastric distress, vomiting, and melena. Prior to this admission there was an exacerbation of approximately 3 months. There were no tarry stools. His vomitus had occasionally been blood-streaked. On physical examination he was seen to be a healthy-appearing male of stated age. There was a well-healed upper right rectus incision, and there was slight epigastric tenderness. A G.I. series was carried out on the day of admission, and a duodenal ulcer niche was demonstrated. There was a 5 to 10 per cent retention of barium after 6 hours. Immediately after admission he was given a bland diet, 6 gm. of methionine daily in divided doses, and 2 oz. of brewer's yeast daily in divided doses. For approximately 1 week the patient complained frequently of severe epigastric distress. His acute symptoms then slowly began to subside. Minor epigastric symptoms from this time on were satisfactorily controlled by the taking of occasional soda-mint tablets. Fourteen days after the start of treatment, on March 24, 1953, a repeat G.I. series was carried out. At this time the duodenal cap was again seen to be constantly deformed with a marked bilateral constriction of the waist. There was some tenderness, but a niche was not visualized. The stomach, although large and atonic, showed no 6-hour retention.

Subtotal gastrectomy was carried out on April 2, 1953. There were numerous intraperitoneal adhesions, and the first portion of the duodenum was deformed and shortened by scar tissue. There was moderate narrowing of the duodenum at the site of ulceration. The pyloric muscle was thickened. Healed duodenal ulcers were found on both the anterior and posterior wall of the duodenum approximately 3 cms. distal to the pylorus, and a pseudodiverticulum was present on the lesser curvature of the first portion of the duodenum about 1 cm. distal to the pylorus. No areas of acute ulceration were found. Microscopic sections taken from the two areas of scarring on the anterior and posterior walls of the duodenum confirmed the gross impression of two healed duodenal ulcers with complete

TABLE NO. 1
PATIENTS GIVEN METHIONINE PRIOR TO OPERATION

	Age	Duration of Symptoms (years)	Previous Operation	X-ray Findings	Length of Time under Observation (days)	No. of days Pre-op. Therapy with Methionine	Type of Ulcer	Status of Ulcer at Operation	Operation this Admission
1. R.D.	35	7	Suture of perforation	Niche	64	19	Duodenal	Healed	Subtotal gastrectomy
2. H.D.	47	6	0	Deformed, tender cap	25	20	Duodenal	Healed	Subtotal gastrectomy
3. C.J.	47	10	Suture of perforation	Niche	23	23	Duodenal	Healed	Subtotal gastrectomy
4. C.F.	54	8	0	Niche	24	23	Duodenal	Healed	Subtotal gastrectomy
5. R.H.	36	9	0	Niche	48	26	Duodenal	Healed	Subtotal gastrectomy
6. N.S.	29	10	0	Niche	29	29	Duodenal	Healed	Subtotal gastrectomy
7. H.C.	41	7	Suture of perforation	Obstruction	36	30	Duodenal	Healed	Subtotal gastrectomy
8. J.L.	37	15	0	Niche	69	37	Duodenal	Healed	Subtotal gastrectomy
9. A.W.	59	25	0	Niche	107	37	Duodenal	Healed	Subtotal gastrectomy
10. E.H.	34	8	Suture of perforation	Obstruction	41	41	Duodenal	Healed	Subtotal gastrectomy
11. N.L.	59	40	0	Niche	70	61	Duodenal	Healed	Subtotal gastrectomy
12. W.L.	44	8	0	Niche	79	69	Duodenal	Healed	Subtotal gastrectomy
13. L.C.	45	25	Suture of perforation	Deformed, tender cap	130	85	Duodenal	Active	Subtotal gastrectomy
14. L.D.	30	14	0	Obstruction	44	32	Pre-pyloric	Healed	Subtotal gastrectomy
15. P.L.	33	10	0	Niche	43	43	Pre-pyloric	Healed	Subtotal gastrectomy
16. W.H.	53	5	(1) Suture of perforation (2) subtotal gastrectomy	Niche	71	19	Marginal	Healed by gastroscopy 21 days	Transthoracic vagotomy
17. E.P.	59	3	Subtotal gastrectomy	Niche	52	43	Marginal	Healed by gastroscopy 32 days	Transthoracic vagotomy
18. D.M.	65	20	(1) Suture of perforation (2) anterior gastrojejunostomy	Niche	78	54	Marginal	Almost healed	Subtotal gastrectomy

epithelialization of their bases. The postoperative course was uneventful, and abdominal wound healing was uncomplicated.

In summary, this is a 47-year-old man with a 12-year history of peptic-ulcer-type symptoms including epigastric distress, acute perforation, melena, intermittent vomiting, and weight loss, who was admitted to the hospital with an acute exacerbation of 3 months' duration. After 14 days of therapy with methionine, his duodenal ulcer was seen to have been healed by X-ray examination. Twenty-three days after start of therapy and while he was still mildly symptomatic, a subtotal gastrectomy was carried out. Complete healing of both anterior- and posterior-wall duodenal ulcers was demonstrated.

Case No. 2 (group 2), R.J.C., a 36-year-old millworker, was first admitted to Togus Veterans Administration Hospital on March 3, 1952, with symptoms of peptic ulcer dating back to service in the U. S. Army in 1943. Following discharge from the Service, there were frequent recurring attacks of epigastric distress and pain usually relieved by food and soda. For 3 years prior to this admission it had been present most of the time although there were intervals of from 1 to 3 months in which he said that he was free of pain. The pain was in the left epigastrium and was frequently associated with radiation through to the back. There had been nausea but no vomiting. During the preceding year he had taken Banthine®

TABLE NO. 2

MEDICAL PATIENTS GIVEN METHIONINE THERAPY

	Age	Duration of Symptoms (years)	History of perforation	Admission X-ray	Repeat X-ray	No. Days Treatment	Type of Ulcer	Length of Follow-up Years	Length of Follow-up Months	Results of Follow-up	Follow-up X-ray	Subtotal Gastrectomy	Path. Findings
1. R.J.C.	36	9	0	DTC	0		D	4	3	Good	DC	0	0
2. J.R.	27	5	0	Niche	0		D	3	10	Good	Negative	0	0
3. J.T.	40	14	+	DTC	0		D	3	4	Good	0	0	0
4. J.B.	39	10	0	Niche	No niche	13	D	3	3	Good	0	0	0
5. G.C.	33	10	0	Niche	0		D	3	2	Good	DC	0	0
6. M.K.	32	1	+	Niche	No niche	22	D	3	0	Good	DC	0	0
7. C.N.	42	10	0	Niche	No niche	20	D	2	4	Good	DC	0	0
8. A.B.R.	44	7	0	Negative	0		D	2	3	Good	0	0	0
9. T.L.	36	8	0	DTC	0		D	2	2	Good	DC	0	0
10. R.C.	22	2	+	Niche	0		D	2	0	Good	DC	0	0
11. R.G.	24	3	+	DTC	0		D	1	4	Good	0	0	0
12. A.R.	35	10	0	Niche	0		D	1	4	Good	0	0	0
13. H.McD.	42	20	0	Niche	0		D	1	2	Good	DC	0	0
14. L.C.	61	11	0	Niche	No niche	16	D	1	0	Good	DC	0	0
15. A.T.	27	4	0	Niche	0		D	1	0	Good	Negative	0	0
16. H.V.	24	4	+	Niche	0		D		9	Good	0	0	0
17. F.L.	42	8	0	DTC	0		D		8	Good	DC	+	Healed
18. P.McF.	33	6	0	Niche	0		D		8	Good	0	0	0
19. P.P.	31	9	+	DTC	0		D		8	Good	DC	0	0
20. R.W.	26	3	0	DTC	0		D		7	Good	0	0	0
21. W.M.	31	8	+	Niche	0		D		5	Good	DC	0	0
22. G.P.C.	42	20	0	DTC	0		D		4	Good	DTC	0	0
23. A.P.	57	10	0	DTC	0		D		4	Good	0	0	0
24. O.H.	49	10	0	Niche	No niche	31	D	2	7	Poor	DC	0	0
25. M.S.	34	7	0	DTC	0		D	1	3	Poor	0	0	0
26. W.C.	30	7	0	DTC	0		D		10	Poor	DTC	0	0
27. G.G.	33	10	0	Niche	No niche	16	D		10	Poor	DTC	+	Healed
28. F.B.	39	12	0	DTC	0		D		8	Poor	DTC	+	Active
29. J.N.	39	10	0	Niche	0		D		8	Poor	DTC	+	Healed
30. E.C.	31	10	0	Niche	No niche	41	D		7	Poor	DTC	+	Healed
31. R.D.	21	11	0	Niche	0		D		7	Poor	Niche	+	Active
32. H.N.	34	11	+	Obstruction	0		D		7	Poor	Obstruction	+	Active
33. L.K.	35	10	0	Niche	0		D		3	Poor	0	0	0
34. N.B.	51	?	0	Not done	0		Gastric		2	Good	Healed (autopsy)	0	0
35. F.C.	77	10	0	Niche (gastroscopy)	0		Gastric		2	Good	Healed (gastroscopy)	0	0
36. G.A.G.	62	1 mo.	0	Niche	0		Gastric		2	Good	Healed (gastroscopy)	0	0

and Gelusil® in small amounts with less relief from these medications than he had had in the past. On physical examination there was epigastric tenderness. G.I. series showed a constantly deformed and tender duodenal cap of clover-leaf variety. He was treated in the hospital for a period of 10 days with rest, antacids, and Banthine, and on discharge, on 3-13-52, he was told to take methionine, grams 1½ t.i.d., and brewer's yeast powder, 1 tablespoon t.i.d. He was seen again on June 13, 1952, at which time he was completely asymptomatic. His next follow-up was in May, 1953. He stated that he felt quite well, had had left-upper-quadrant pain two times in the past few months, lasting 2 to 3 days, coming on 1 to 2 hours after meals. The distress was relieved by taking milk. He said that he was some better than he had been 2 years ago. He had been working steadily. There had been no weight loss. He was seen again in November, 1953, at which time he had pain two days a week, occasionally awakening him at night. He said that he was a lot better than he had been in 1944, perhaps 40 per cent better than before starting on this treatment in March, 1952. He was working steadily. G.I. series done on November 12, 1953: There is a deformed cap with bilateral constriction of the waist that occasionally fills well by fluoroscopy. No tenderness, no niche. Follow-up, November, 1954: He stated that he was doing well until 3 months ago, at which time his pension was stopped. He then had to do overtime work in order to keep up payments on the house. He did not at this time give a good story of typical ulcer distress. There were no symptoms during the day, but at nighttime he would feel very tired. He had adhered to a six-feeding schedule and had continued methionine. On examination the abdomen was soft with slight tenderness to the left of the epigastrium. He was seen again in follow-up on November 8, 1955: "He feels pretty fair. Eight months ago he ran out of his supply of methionine, and he began to have persistent heartburn and occasional epigastric pain. The patient's service connection was severed 1 year ago, and Outpatient stopped sending him brewer's yeast and methionine. The patient feels that these drugs helped him a lot, wishes he could have them again. He is slightly obese; there is slight epigastric tenderness." He was started once again on methionine; yeast was discontinued; and he was placed on 1 vitamin capsule daily. His next follow-up was approximately 6 months later, on 5-17-56: The patient stated at this time that he had had no flare-up of ulcer-like pain. Occasionally, perhaps 1 to 2 times a month, he had had a transient episode of epigastric burning. There was no nausea or vomiting. His weight was constant. The patient stated that when the mild epigastric distress occurred it could be promptly relieved by Amphojel®. On physical examination, he was stocky and well-nourished. There was no abdominal tenderness. The patient volunteered that his program helped him to the extent that he was willing to buy the medications himself. He will be seen again in one year.

This is an example of a 36-year-old patient with chronic peptic ulcer of 9 years' duration with frequent symptoms, who has done very satisfactorily on therapy with methionine over a period of 4 years and 2 months. His symptoms are much milder than they used to be and much more infrequent. Any epigastric distress that he now has is very quickly controlled by the use of occasional antacids.

DISCUSSION

It is widely accepted that many factors may influence the development and perpetuation of peptic ulceration and that some of these factors may be principal ones and some may be largely contributory in nature. Methionine was chosen as a test substance for the treatment of peptic ulcer as it is theorized that a deficiency of the sulfur amino acids or a disturbance in the metabolism of these essential amino acids is causally related

to two of these factors, that is, a diminished resistance of the gastroduodenal mucosa to autodigestion and indolence in healing of already-established, active peptic ulceration. Such a nutritional deficiency could be primary and due to poor food habits, excessive consumption of highly refined foods or price rationing, or it could be a secondary or conditioned inadequacy^(36,37,38) and the result either of an interference with digestion, absorption or utilization of essential nutrients, or related to factors which increase their requirements, destruction or excretion. The typical patient with chronic peptic ulcer exhibits a diathesis characterized by gastric hypersecretion and by increased gastric motility, largely due, it is believed, to hyperactivity of the vagus. In this instance we may speculate that because of stress of one kind or another this patient also metabolizes and excretes excessive amounts of sulfur-containing substances (such as gastric mucin). If because of long-continued stress, the demand for these substances exceeds the supply, if there is an insufficient supply because of hormonal inhibition, poor liver function, or an insufficient dietary intake due to alcoholism, dietary idiosyncrasies, poverty, etc., then an insufficient supply of these sulfur-containing substances will be present. In various cases of peptic ulcer several of these factors may be operative and some factors may be alternately of primary importance or only of a contributory importance. For example, in the elderly patient with gastric ulcer not associated with pyloric obstruction or chronic duodenal ulcer disease, vagotonia may not be a significant factor. This type of patient frequently does not show either hypersecretion or hyperacidity. On the other hand, a lowered mucosal resistance certainly would be a factor in the development of the ulceration, and it could well be explained as secondary to one of the various nutritional deficiencies described above.

If the effect of stress and increased pituitary adrenal activity is more one of antianabolism rather than catabolism, one would expect the presence of inhibition of the formation of the essential sulfur-containing substances, and that mere nutritional replacement would not be enough. This possibility cannot be ruled out, and the failure of methionine in some of the cases listed above might be related to this possibility. Methionine is an essential amino acid and cystine is not considered to be so, but this evidence has been largely based on experiments carried out on normal humans. Very little is known at the present time about the minimum requirements of different essential amino acids in disease.

As it is well known that patients with peptic-ulcer disease may undergo periods of spontaneous remission, and as it has been repeatedly observed that rest alone without specific therapy of any kind will often be sufficient to allow for the healing of the ulcer process and amelioration of symptoms, it cannot be concluded from the results observed in this study that methionine had any direct effect on the natural course of the disease in these 54 patients. Nevertheless, it is felt that the re-

TABLE NO. 3
SUMMARY — METHIONINE THERAPY
IN
54 PATIENTS WITH PEPTIC ULCER

	I (Surgical Group)			II (Medical Group)			
	Healed	Healing	Active	Good	Clinical Failure	Active at Operation	
Duodenal	12	0	1	22	7	3	45
Marginal	2	1	0	1*	0	0	4
Gastric	2	0	0	3	0	0	5
	16	1	1	26	7	3	54

Good results 43) = 80%
Clinical failures 7)
) = 20%
Proved active ulcers 4)

Short-term good results — 20 out of 21 patients (Surgical cases plus 3 in group II with gastric ulcer)
Long-term good results — 23 out of 33 (70%) (Duodenal-ulcer group only)
*Marginal and duodenal

sults of this preliminary study suggest that there may be a relationship between sulfur-amino-acid metabolism and the pathogenesis of peptic ulceration.

CONCLUSION

- (1) Fifty-four patients with chronic peptic ulcer have been treated with dl-methionine by mouth over a period of 4½ years. Good clinical results have been obtained in 80 per cent of cases.
- (2) Reference has been made to a number of loosely related observations in the field of protein metabolism and in the field of wound healing, and a certain amount of speculation has been indulged in as to the part a deficiency of sulfur amino acids or a disturbance in their metabolism may play in causing a diminished resistance of the gastroduodenal mucosa to autodigestion, as well as in leading to an indolent wound-healing mechanism which may be present in some patients with peptic ulcer.

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Anesthesia And Surgery For The Diabetic*

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Dr. Elliott Joslin defines diabetes as "a hereditary disease characterized by an increase of glucose in the blood and excretion of this sugar in the urine. It is dependent upon the deficient formation or diminished effectiveness of insulin secreted by beta-cells of the islands of Langerhans of the pancreas and is functionally inter-related with conditions arising in the liver and in endocrine glands other than the pancreas, particularly the pituitary but also the adrenal and thyroid glands."

Ordinarily the individual whose urine contains 0.5% or more of sugar can be presumed to have diabetes. However, complete differential diagnosis requires consideration of four different conditions characterized by glycosuria:

1. *True diabetes*: If on a normal, unrestricted diet, the true diabetic has a fasting venous-blood sugar-content of 130 mg. or more per 100 cc. of blood; this rises to 170 mg. or more following any meal. Glycosuria invariably results from this hyperglycemia; it is a constant feature of the disease and essential for establishing the diagnosis.

2. *Potential diabetes*: If on a normal, unrestricted diet, the potential diabetic has a fasting venous-blood sugar-content of less than 130 mg. per 100 cc.; following any meal glycosuria may occur but the blood sugar level does not attain 170 mg. per 100 cc. This type of glycosuria is readily controlled by simply reducing the dietary intake, and a slight restriction of carbohydrates alone often suffices.

3. *Renal glycosuria*: If on a normal, unrestricted diet, the individual with this disorder has almost continuous glycosuria, but this varies in degree and wholly irrespective of the dietary intake; the blood sugar levels are invariably within normal limits and the condition is quite asymptomatic.

4. *Unclassified glycosurias*: This heterogeneous group of disorders comprises such inconstant or ill-defined states as "alimentary glycosuria," "low renal threshold," and the glycosuric tendencies that occasionally develop during the courses of various infectious and endocrine disorders. In some of these conditions it may be extremely difficult to determine the actual nature of the metabolic disturbance responsible for the appearance of sugar in the urine.

True diabetes can be readily differentiated from all other disorders in which glycosuria occurs by means of a glucose tolerance test, provided this is carried out in

accordance with standards that are probably already familiar to all physicians.

For practical purposes it is useful to divide the group of true diabetics into three classes — mild, moderate and severe. This classification is based upon the amounts of insulin required to control their conditions, respectively. The *mild diabetic* remains consistently aglycosuric if his diet is restricted to 150 grams of carbohydrate daily; he is also fully controlled by 10 units of insulin when his diet is increased to 200 grams of carbohydrate daily. It is something of a paradox that it is these "mild diabetics" who eventually have the highest incidence of disabling vascular complications and who most often become candidates for surgery. This is largely because these patients often have a tendency, by reason of the very mildness of their disease, to neglect to maintain a close and constant check on and control of their conditions. The *moderate diabetic* remains consistently aglycosuric if his diet is restricted to 100 grams of carbohydrate daily; also, he is fully controlled by 10 units of insulin when the diet is increased to 150 grams of carbohydrate daily; furthermore, by increasing the insulin dosage (up to 50 units per day) he can take diets of considerably higher carbohydrate content and still be fully regulated. The *severe diabetic* is unable to remain consistently aglycosuric unless his diet is restricted to 50 grams or less of carbohydrate daily and requires from 10 to 50 units of insulin on a diet containing 150 grams of carbohydrate.

In adults, the onset of diabetes usually is insidious and the initial symptoms relatively inconspicuous. Often two or more months elapse before the patient becomes convinced that he must have some sort of illness. With children, on the other hand, usually there is an abrupt onset of an immediately recognizable illness; at times it is possible to "pinpoint" its beginning to a particular week, or even a given day. The *major symptoms* are polyuria (73%), polydipsia (67%), loss of weight (64%) and polyphagia. Occasionally, some co-existing disorder of another endocrine system may act to prevent the weight-loss that usually occurs. The *minor symptoms* most frequently experienced are pruritus (especially vulvar), blurring of vision and pain in the extremities (20%).

A peculiar feature of diabetes, as it occurs today, is the fact that the disease itself is much less of a hazard to health and life than are the complications to which it almost inevitably gives rise. It is the latter that are almost entirely responsible for there being any peculiar problems in surgery and anesthesia for diabetic patients. Indeed, since fully half of all diabetics sooner

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or later require some sort of surgical treatment, it might almost be said that surgery is one of the most frequent of the late complications of the disease, if not actually one of its clinical features. The most dangerous and acute of all diabetic complications is, of course, acidosis or "coma"; however, only under the most exceptional circumstances would this condition be encountered in a patient undergoing surgery. It is the long-term complications of essentially irreversible character that are of principal significance for both surgeon and anesthesiologist. Among the more youthful diabetics these tend to be renal and retinal disorders, for the most part; among adults, cardiovascular conditions predominate. Some degree of vascular damage is clinically evident in 75 per cent of all diabetics 20 years of age or older, and at least half of this group have coronary arterial disease. Degenerative arterial diseases are increasingly common and severe with advancing age, and among elderly diabetics cerebrovascular complications are of frequent occurrence.

In 1921-22, the discovery of insulin by Banting and Best began a new era for the diabetic. Results of treatment prior to that time are so dramatically in contrast with those now to be expected that it is worthwhile to mention them briefly. During the period from 1898 to 1914, the average duration of life following the onset of diabetes was not over two years, and fully two-thirds of its victims died in coma. From 1914 to 1922, the starvation-type of regimen was generally used in the treatment of diabetes; this succeeded in lowering the mortality rate of coma to 41.5 per cent. In contrast with these older experiences, the incidence of fatal coma during the 10 years just past has been not over 1.8 per cent. At present, the average duration of life following onset of diabetes is 16 years and the average diabetic's life-expectancy is 65 years. Prior to the era of insulin nothing but minimal, rapidly accomplished surgery could be attempted in the diabetic patient with any reasonable degree of confidence in a successful outcome. Postoperative mortality and morbidity were commonly encountered, as results of the diabetic's unfavorable bodily state; the latter, in turn, was the inevitable consequence of the disease itself plus the detrimental state of chronic tissue-starvation necessarily created by the mode of treatment. In contrast, all types of surgery can now be done on diabetics with scarcely greater incidence of operative and postoperative complications than is met with among patients of all other groups as a whole. Among 200 patients of the Joslin Clinic on whom surgery was performed during the period, July through December, 1954, there occurred only 2 deaths postoperatively; in one case gastric hemorrhage was the cause of death and in the other it was myocardial infarction. Recently I had a diabetic patient over 100 years of age, who underwent a surgical procedure with notable success.

It is not at all difficult to enumerate the various factors that have, without question, been largely respon-

sible for so remarkably reducing the hazards that formerly were associated with any surgery in the diabetic. These are plainly recognizable as (1) avoidance of hypoxia and hypotension during anesthesia and surgery, (2) improved surgical techniques and performances, (3) greater availability and use of blood and its several substitutes, (4) introduction and increasingly effective use of antibiotic agents, (5) continuing development of improved types of insulin and of knowledge of how best to use them.

The last of the factors just mentioned is particularly significant and it may be worthwhile briefly to review the major advances that followed the discovery of insulin: In 1926, Abel and his co-workers at Johns Hopkins developed *crystalline insulin*; it forms a clear solution; its effect develops rapidly and lasts for 5-7 hours. In 1935, Hagedorn and his associates at Copenhagen developed *protamine zinc insulin*; it is prepared as a cloudy suspension; its effect develops slowly and persists for 30-36 hours. Subsequently, Hagedorn *et al.* developed *NPH insulin*, which is a 2-to-1 mixture of crystalline and protamine zinc insulins intended to provide the principal merits of each form; its effect develops fairly rapidly and persists for 24 or more hours. The most recently developed, acceptable preparation is *lente insulin*, introduced by Mueller of Copenhagen; it is a clear solution with an ultra-long duration of effect, approximately 36 hours. *Semi-lente insulin* is an amorphous, modified form of the ultra-lente preparation; it is effective for about 12 hours. Many trials have been carried on to determine in what proportions these two forms of lente insulin can most advantageously be combined; a mixture containing 70% of ultra-lente and 30% of semi-lente insulins apparently was considered to be the one most generally acceptable and this is the form in which lente-insulin is currently being marketed. Its action lasts for 20-24 hours. At the Joslin Clinic a mixture of 75% ultra-lente and 25% semi-lente is preferred because its effect persists through a full 24-hour period.

The constantly maintained efforts to produce improved types of insulin have been prompted largely by a desire to adapt insulin to the patient's needs and convenience and thereby free him, to a considerable degree, from the necessity of adapting himself to insulin as he was compelled to do when only the original preparation was available.

Returning now to our primary topic, we note that every problem that is peculiar to the successful accomplishment of surgery and anesthesia in the diabetic patient represents, actually, one aspect of a single, central problem: to prevent or to keep minimal any aggravation of the effects of the inherent metabolic faults that constitute the disease, and of the impairments of structure and function in the vascular system that invariably accompany diabetes.

One of the chief requirements for successful surgery in diabetics is that diagnosis and operation be conduct-

ed and completed with a minimum of procrastination. The peculiar vulnerability of these patients to infections makes any undue delay extremely hazardous whenever any inflammatory process is present. The only exception to this rule would be made with an individual who is completely out of control and with impending or existing acute acidosis. Under these conditions it is almost always necessary first to institute measures to reverse, to some degree, the course of the profound disorder of metabolism that exists, before attempting surgery. However, it is by no means necessary to continue such emergency treatment until complete aglycosuria is achieved, before beginning the operation.

For the adequate management of diabetic acidosis, close and constant attention to each of several different factors is required simultaneously. *Dehydration* is always present to an extreme degree and this must be promptly corrected by the parenteral administration, during the first 24 hours, of 4-5 liters of saline solution. The first liter should be given immediately and rapidly. Although this large volume of fluid is urgently needed to combat dehydration and prevent circulatory collapse, one must bear in mind the fact that such massive infusion of saline solution is capable of producing a significant degree of potassium-deficit, simply because of its diilting action if for no other reason. At the same time, both the existing ketosis and the action of the insulin being given are tending to reduce the potassium-level of the plasma. Potassium balance is a vital but delicate mechanism and it is of very great advantage to follow its trends by means of serial electrocardiograms whenever this is possible. *Circulatory insufficiency*, if persistent, may indicate adding nor-epinephrine or Neo-synephrine® to the infusions; occasionally it may be advisable to give a plasma or a blood transfusion, although these are not ordinarily indicated. *Administration of glucose* is an essential feature of the treatment, although it is not universally agreed that this must begin immediately and as one of the first steps in the treatment. But, once circulatory volume and efficiency have begun recovering, the body urgently needs an abundant supply of sugar to replenish its depleted glycogen stores. To meet the need approximately 300 grams of glucose must be provided daily, either by infusion or by mouth. Orange juice is an especially valuable food at this time because, in addition to its excellent carbohydrate-content, it is an unusually good source of potassium (4.5 to 5.0 MEq per 100 cc.). *Insulin* is obviously essential in the treatment of acidosis. Its effect is immediately desired and therefore crystalline insulin is the form of choice. Probably the only reliable criterion of proper dosage of insulin is obtained from observing the effects obtained, and the only rule that applies is the general principle that the more profound the coma the greater will be the amount of insulin needed. For the initial dose it may be both convenient and practical to use, as a gauge, the ratio of 1 unit of insulin to 1 kg. of body weight; the amount

used, however, may well vary from 20 to 100 units, in accordance with the findings of individual cases. The initial dose of insulin is then repeated, at intervals of 30 to 60 minutes, until improvement is clearly apparent from both clinical and laboratory evidences.

When a properly regulated diabetic is to undergo surgery, preoperative preparation should begin at least 24 hours, and preferably 48 hours, before operation. There must be ample but fully controlled dietary intake during this period to provide for maximal deposition of liver glycogen. When optimum use of food and insulin is made, even the severest diabetic state temporarily becomes mild under their beneficent influences. It could well be regarded as axiomatic that prolonged preoperative fasting is detrimental to the diabetic. He should continue with his normal diet and regimen up to 12 hours prior to operation. In many cases, such as those whose surgery will be limited to an extremity, it is safe and therefore advisable to continue taking nourishment up to 4 hours preoperatively. In this connection, however, it is well to note that a significant reduction of physical activities almost invariably occurs when a patient is operated upon, and with this his capacity to utilize carbohydrate and his need for it are proportionately reduced. Some decrease from the usual dietary intake is therefore indicated at this time. For example, a patient customarily taking 200 grams of carbohydrate daily could well be reduced to 170 grams during this period of comparative inactivity. Because of the unfavorable effect of extended fasting, for the diabetic, plus the additional hazard of food-deprivation for the patient who has been taking a long-acting type of insulin, it is extremely desirable to arrange having surgery on diabetics done at the beginning of the day's work in the operating room.

Our personal experience has persuaded us that one should use less preoperative medication for the diabetic than for the average patient. For an elderly patient we prefer to omit it entirely. An agreeable feature of dealing with diabetics is the fact that their prior experiences with doctors and hospitals usually cause them to be less apprehensive than is the ordinary individual in the same position. Also, they tend to be more fully aware of the unfavorable consequences of neglecting to undergo medical treatment when it is advised. Consequently, there seldom is real need to use sedatives to the point of obtunding mental functions. A serious objection to heavy preoperative sedation is the fact that it is quite difficult to determine, when a patient comes to the operating room in a somewhat confused or disoriented state, if the impairment is merely an effect of medication or if it is a manifestation of an early hypoglycemic reaction.

To large degree, the anesthetic agents and methods used in any case are determined by the particular features of that particular case, plus the personal preferences of the anesthetist involved. This general principle need not be modified to any extent by reason of

the patient's being a diabetic. Theoretically, local and regional anesthetic procedures would be preferable to all others, by reason of the fact that they are practically incapable of causing any significant disturbance of metabolic functions. Certainly, spinal anesthesia is to be recommended for practically any operation for which it can be appropriately used. We use it as a routine procedure for operations on the lower extremities and within the lower abdomen.

For many operations, of course, general anesthesia is obviously necessary. Aside from the fact that signs of hypoglycemia are masked by the unconscious state thus created, we have seen little or no reason for feeling that the usually employed anesthetics have any adverse effects on diabetes, provided adequate pulmonary ventilation and circulatory activity are constantly maintained during their use. For major operations our first choice is usually cyclopropane plus a small amount of ether, with one of the relaxant drugs when indicated. An endotracheal airway is definitely advisable in almost every case. When all factors have been fairly considered, however, it is difficult to draw any conclusions as to what are the best methods of providing surgical anesthesia for any given case or group of patients. Probably those with which the anesthesiologist concerned has had the largest experience and has acquired the fullest confidence are usually the preferable ones.

Any disturbance of the diabetic's metabolic functions that can accurately be attributed to the anesthetic agent *per se* is, almost invariably, comparatively trivial, transient and readily controlled. Serious post-anesthesia sequelae in the diabetic can be attributed, in large measure, to hypoxia resulting from a period of inadequate pulmonary ventilation while the patient was anesthetized.

Any diabetic patient who uses insulin regularly must always be considered to be a possible candidate for hypoglycemic reaction. The usual manifestations that give warning when such an incident is impending are no longer discernable under anesthesia; consequently, if there exists any reason for thinking that hypoglycemia might develop or if there is any serious doubt of the patient's status from this point of view, the intravenous administration of glucose solution is indicated. It is well to remember that a temporary state of hyperglycemia is never the threat to life or welfare that hypoglycemia can easily be. A technique has recently been developed which permits rapid measurement of blood sugar in very small samples. When this procedure is available it provides such reassurance of the patient's diabetic status that it soon becomes invaluable.

It is always well to remind ourselves of the importance of handling the diabetic gently and seeking to

reduce all traumata to the absolute minimum. Diabetic tissues are deficient in the capacity to overcome the effects of any injury, by reasons of their abnormal sugar content and the ever-present impairment of their vascular supply. The prevention of undue trauma means a good deal more than simply avoiding bungling surgery. It means the exercise of constant attention to prevent misuse and overuse of heat, tourniquets and pressure. Even keeping a limb elevated during an operation may lead to severe ischemic difficulties later. We feel that the veins of the lower extremities should never be used for injections of any sort, because of the greater likelihood of undesirable sequelae. The manner in which the diabetic's metabolic dysfunction and a superimposed acute infection act to aggravate each other is too well known to require more than brief mention to make it quite apparent that all forms of traumata should be kept to an irreducible minimum when one is treating diabetic patients.

We are convinced that actual measurement of blood sugar level is the only sure method of evaluating a diabetic's status at any given time. Now that the technique of rapid testing for sugar is available we rely on it altogether, whenever it becomes advisable to know exactly what a patient's condition is. Compared to this procedure, any urinalysis is totally unreliable.

SUMMARY

Diabetes, when adequately controlled, does not significantly affect the usual indications for anesthesia. When surgery is done on diabetics the major complicating problems, both operative and postoperative, are attributable to the presence of already existing diabetic complications — renal involvement in the younger individuals and vascular disease in the older ones. It is to the anesthesiologist's advantage to be familiar with the principles of medical management of the diabetic patient, especially with the various types of insulin that are available and the proper methods of using each, with the diagnostic features that differentiate diabetic acidosis from insulin reaction and with the proper therapeutic measures that each requires. As a rule, indicated surgery for a diabetic patient should be carried out as promptly as possible. The one exception is the patient who is uncontrolled and therefore "acidotic"; for such a patient treatment of the diabetes almost invariably must be given priority over all other measures. While a diabetic patient is under surgical anesthesia it is of particular importance that he not be depressed by preoperative medication and that he be continuously safeguarded against the deleterious effects of hypoxia, hypotension and hypoglycemia.

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Arterial Ischemia Of The Lower Extremities

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With the increased span of human life, we are seeing more and more cases representing arterial ischemia to the lower extremities.

By early diagnosis of these conditions, and by present day concepts of treatment, many limbs that formerly came to amputation, are now being saved. Use of arterial grafts, endarterectomy, embolectomy, and sympathectomy, all play an important part in the treatment of arterial ischemia.

DIAGNOSIS

The "4-P's": *Pain, Pallor, Paresthesia, Pulselessness*, are important landmarks in early diagnosis and generally are present in varying degree in all cases of arterial insufficiency. The onset of the disorder, whether acute or gradual, will generally manifest itself by these "4-P's." The acute onset of these findings suggests sudden occlusion, which is generally due to arterial embolus from a fibrillating heart or an arteriosclerotic plaque, severe injury to an artery such as a gunshot wound, arterial contusion from injury, or dislocation of a joint. The signs and symptoms are rapid in onset and demand immediate intervention.

The gradual onset of the "4-P's" suggests arteriosclerotic obstruction seen in advanced arteriosclerosis, or thromboangitis as in Buerger's disease.

We are seeing more and more segmental, arteriosclerotic, arterial occlusion in the lower extremities, especially in patients between 40 to 60 years of age, and great advances have been made in the treatment of this condition by endarterectomy or by-pass arterial grafts.

Once the signs and symptoms of arterial ischemia are apparent, one then must know how properly to examine the lower extremities for arterial inflow.

Pain: The pain generally involves the calf and foot. It may be intermittent in character, and often is relieved by rest. It usually presents as a dull ache, but may be described as a severe burning sensation. Pain at rest is a grave sign, and signifies rather advanced ischemia. Cold generally aggravates the discomfort, and the patient frequently insists on wearing woolen socks even at moderate temperatures.

Pallor: The ischemic limb generally shows rather marked pallor, especially upon elevation above heart

level. A good diagnostic test is to elevate the patient's foot above heart level, and ask him to exercise his ankles and toes; very often, pain is produced and his foot will turn a nearly chalky white.

Upon dependency, the ischemic limb becomes a dusky red, which is suggestive of vascular stasis.

Paresthesias: Numbness and tingling are often present, and seem to be aggravated by cold.

Pulsations: Absent pulsations at aortic, femoral, popliteal and tibial artery levels suggest obstruction of the artery involved, and demand careful investigation. *Aortic* pulsations are generally quite easily felt at the level of the umbilicus. *Femoral* pulsations are felt just below the inguinal crease. *Popliteal* pulsations are more difficult to feel. They usually are located in the lateral aspect of the popliteal space, and are most easily palpated with the knee flexed and completely relaxed. The *posterior tibial artery* pulsations are felt behind the medial malleolus, and the *anterior tibial artery* pulsations are felt on the dorsal aspect of the arch of the foot, generally in line with the first metatarsal. If one easily feels a pulsating aorta but no right femoral pulsation, then the obstruction usually is between these two points. If a right femoral pulsation is felt but no right popliteal pulsation is noted, again, common sense tells one that the obstruction is between femoral and popliteal levels.

Therefore, given a patient with pain, pallor, paresthesia, and pulselessness in the lower extremities, and knowing the points where pulsations should be easily felt, one can very accurately tell clinically where the obstruction occurs.

Arteriography: Injection of an opaque medium into the artery, followed by rapid x-rays, will be of diagnostic aid in the more difficult cases in locating the area and extent of the obstruction. Arteriography is very useful in the chronic cases, but has little or no use in those cases with an acute onset.

TREATMENT

Once the diagnosis is made, adequate treatment is imperative.

Buerger's disease, once proven by biopsy, is best treated by: avoidance of all forms of tobacco; adequate foot hygiene; avoidance of cold; Buerger's exercises; and lumbar sympathectomy.

Arterial emboli with associated arterial occlusion, is a surgical emergency and should be treated by direct operative approach to the artery and area involved with removal of the embolus. In this type of surgery, one must always be prepared to examine and open, if neces-

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**Chairman of Department of Surgery, College of Medicine, University of Vermont, Burlington, Vermont.

sary, the artery at distal levels to remove any distal embolus or propagation of clot. The patient must be draped so that one can move from the aortic area, to the arteries in the ankle if need be, for removal of clot.

Segmental occlusion of major arteries secondary to arteriosclerosis, is probably best treated by a by-pass arterial graft or endarterectomy, after adequate work-up including arteriogram has been carried out.

Generalized arteriosclerosis of the lower extremities which is unsuitable for grafting technique, may be improved, in properly selected cases, by lumbar sympathectomy, Buerger's exercises, adequate foot hygiene, and avoidance of cold and tobacco. If the patient has an associated diabetes, this must be brought under adequate control.

In all of the above conditions, *amputation* should be used only as a last resort.

CONCLUSIONS

1. Arterial Ischemia to the lower extremities generally presents with "4-P's": Pain, Paresthesia, Pallor and Pulselessness.
2. The onset may be acute or chronic.
3. Adequately to diagnose the condition, one must know how and where to check for pulsations at aortic, femoral, popliteal and tibial artery levels.
4. The diagnosis generally is easy to make, and once made, adequate therapy as indicated, must be carried out.

96 Colchester Avenue, Burlington, Vermont

THE TREATMENT OF CHRONIC PEPTIC ULCER WITH DL-METHIONINE

Continued from Page 350

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Meprobamate—An Important Adjunct To Post-Operative Surgical Care

TIMOTHY A. LAMPHIER, M.D.

Clinical studies clearly demonstrate that post-operative neurosis, anxiety, and depression may retard full recovery as much as the physical condition of the patient. For the person recuperating from major surgery to recover as quickly as possible, both his physical and mental condition must be considered. Unfamiliar surroundings, separation from home and family, and enforced inactivity may contribute markedly to the patients' fears and worries concerning his degree of recovery, his lost earning capacity and the ensuing effect upon his family and dependents.

No study has yet shown the loss to and impairment of our national earning capacity because of the man-hours lost through longer hospital stays and recuperative periods due to depression and anxiety. The cost cannot be measured solely in dollars but also in terms of national health and happiness. A depressed or severely anxious convalescent may be an upsetting influence on those around him and may often cause disruption and disharmony in family and community life.

It is essential, therefore, that as much as possible be done to shorten post-operative recuperative periods. A tranquil, relaxed and cooperative patient invariably recovers and more completely in less time than a tense, anxious, worried one. Not so long ago, early post-operative ambulation was frowned upon. Today it is an accepted practice and has saved millions of man-hours and has prevented extensive economic loss both to the patient and to society at large. The nervous fearful person may resist most strenuously all attempts to get him out of bed and on his feet, thus needlessly prolonging his time of recovery.

Hypnosis has become popular of late in some limited areas. Hypnosis separates the physical from the mental and to a certain extent, is effective in relieving anxiety and tension, thus aiding in recovery. However, hypnosis practiced on any large scale can be dangerous, for one reason because of the extreme susceptibility of the subject. Also, it is only of value to those who are capable of being hypnotized and thus cannot have any widespread benefit.

What is required then is some other means of alleviating mental depression, anxiety, and fear and this means should be something which is not habit-forming, which is easy to administer and will have widespread effect with the least amount of reaction. To satisfy this need some new drugs have been developed but all too often they have caused additional discomfort to the patient through nausea, vomiting, headache and, on oc-

casion, serious complications such as liver and kidney damage, blood dyscrasias and even bone marrow damage.

Meprobamate, a propanediol derivative first reported by Ludwig and Berger in 1950 and described pharmacologically by Berger in 1954 has been found to be a most satisfactory answer to these problems. Extensive testing has shown it to be an effective tranquilizing agent and one that can be used with safety and confidence.

In a recent study made by the author on one hundred and thirty-six patients undergoing major surgery, the advantages of the use of meprobamate were clearly seen. One of the most serious drawbacks to the use of opiates and barbiturates is that the patient becomes sluggish and loses his mental alertness. At times, this sluggishness may become so pronounced that it interferes with required modern surgical post-operative regime and thus prolongs the convalescent period.

In some cases additional dosage with barbiturates is required to induce sleep and morning hangover often results. With meprobamate, when taken three times a day as in this study, the necessity of additional dosage at night was rare, no carry-over effects were observed, and yet it was extremely effective as a tranquilizer without producing mental sluggishness. The fears often associated with ambulation were reduced, and thus complications such as phlebitis, ileus and hypostatic pneumonia which sometimes occur after lengthy bed rest were avoided.

Meprobamate produces marked synchronization of brain wave patterns which is most pronounced in sub-cortical structures, particularly the thalamus. Here is the controlling center for emotion and consciousness. While the ordinary sedative produces characteristic sleep patterns in the electroencephalogram, meprobamate does not produce these changes. When meprobamate was used there was a reduction of the tension which causes insomnia and the patients were able to have the "good nights sleep" which is so beneficial to both mental and physical health.

A frequent cause of post-operative pain is muscle spasm — meprobamate reduces spasm, thereby alleviating pain. Its advantage over other drugs was seen in the greater potency and longer duration. It was found to be most beneficial in fracture cases. Here the reduction of spasm and pain gave greater opportunity for ambulation and relieved muscle stiffness and tension.

The toxic effect of any drug is always a major con-

TYPE OF SURGERY	No. of Patients	Satisfactory Response	Unsatisfactory	Reaction
Gastrectomies	15	13	1	1
Hemorrhoidectomies	25	23	2	0
Thyroidectomies for Toxic Goiters	16	14	1	1
Pan Hysterectomies including Bil. Salpingo-oophorectomies	36	36	0	0
Open Reduction of Fractures and Major Joints	18	16	0	0
Miles Resections	10	10	0	0
Laparotomies — Metastatic C.A.	6	6	0	0
Mastectomy for C.A. of Breast	11	8	3	0
TOTALS	137	126	7	2

sideration. In this study, meprobamate has again shown its low toxicity. Pathological tests of the liver, the blood forming elements, and the kidneys revealed no changes. Systematic laboratory analysis of blood counts and urine showed no toxic effects.

Meprobamate has not been found to be habit-forming. Extensive application and use of the drug has been carried out without any evidence being found of addiction. In the current study, in most cases it was given three times daily and terminated on hospital discharge. There was no request for increased dosage to obtain the same effect.

The great danger of most sedating drugs is the creation of the desire to use more and more. The patient eventually becomes so dependent upon such drugs that his sense of values and reason disappear with the increased dosage. Thousands of drug addicts become afflicted through the well-meant prescription administered in the hospital. Today the cost to society let alone to the individual is counted in the millions. The loss is not merely monetary. Many lives have been ruined, families broken and crimes committed because of drug addiction. The benefits of having a safe non-habit forming central nervous system depressant are incalculable.

CLINICAL STUDY

This series consisted of one hundred and thirty-seven surgical patients treated post-operatively with meprobamate. One hundred and twenty-six showed a satisfactory response to the drug. Nine seemed to be unaffected and in two cases, its use was discontinued because of nausea. (See Table above.)

There were no serious reactions and no instances of requests for prolonged or increased dosage. Drowsiness was occasionally encountered, but was counteracted by reduction in dosage.

SUMMARY

Clinical observation and testing show that meprobamate is an effective tranquilizer. It relieves anxiety and depression, lessens pain due to muscle spasm and is an aid to early post-operative ambulation. Its use does not cause mental sluggishness or morning hangovers and patients responding well to it remain alert while calm and free from excessive fear and nervousness. It has no habit-forming propensities, few untoward reactions occur as a result of its use and it is an invaluable aid to the surgeon in hastening his patients along the road to full recovery following major surgical procedures.

30 The Fenway, Boston, Massachusetts

SPECIAL ARTICLES

Diabetes Detection Week

E. R. BLAISDELL, M.D.*

Since 1948 the American Diabetes Association, in cooperation with the various State and County Medical Societies, has sponsored a drive during the week preceding Thanksgiving in order to discover as many unknown cases of diabetes as possible and put them in the hands of their family physician for early treatment.

The realization that vascular disease is one of our major problems nationwide and that the uncontrolled diabetic is especially prone to develop early proliferative retinitis and blindness, coronary disease, cerebral accidents, the "diabetic kidney" and gangrene of the extremities makes it extremely important that we as physicians should foster every attempt to make the Detection Drive a success in our community.

The onset of diabetes in the child is almost invariably associated with severe, acute symptoms. Consequently, medical advice is usually sought early and thanks to the alertness of the family physician and probably also due to a better understanding of the disease by the public, the mortality rate as a result of coma is now relatively low. In the adult, the situation is frequently very different; a mild or even moderately severe diabetes may go unrecognized for several months and occasionally two or more years until the patient seeks medical treatment for either failing sight, coronary thrombosis, a cerebral accident or gangrene of the feet. Early recognition of the disease could well have prevented any one of these complications and saved the patient and oftentimes the hospital and State a great deal of money. Furthermore, if the disease in the older age group is discovered early, it can many times be well controlled by slight dietary modification with or without oral therapy depending upon the severity of the diabetes. Insulin should be given immediately, however, if the above measures fail to control the sugar.

The slogan of the American Diabetes Association during Diabetes Detection Week has always been "To Discover the Million Unknown Diabetics." The necessity of changing this slogan is now quite apparent. One of our largest insurance companies, after an extensive survey, has come up with the report that we have now

an additional 4,475,000 potential diabetics; that is, there are nearly 5,000,000 people in this country with occasional traces of urinary sugar who after a Glucose Tolerance Test will have an abnormally high blood sugar curve and will probably subsequently develop diabetes. Quite a price to pay for our high caloric diets and comfortable chairs in front of the television screens!

In an attempt to discover a larger number of these unknown cases and to place them under treatment as soon as possible, the American Diabetes Association through the State Medical Associations has asked assistance from some of the allied professions and the State Pharmaceutical Societies have been selected as those that could be very helpful. For several years the Maine Medical Association has appointed a Diabetes Committee and the County Societies have been asked to have a committee represent each county. This year, the Maine Pharmaceutical Association has also appointed a Chairman for each County.

Representatives from the Maine Medical Association and the Maine Pharmaceutical Association met at Augusta on September 8, 1957, at which time eight County Chairmen of the Medical Societies and sixteen County Chairmen of the Pharmaceutical Societies, including the President and Secretary, were present. It was voted that some time prior to November 17, Diabetes Detection Week, the County Chairman of each Association would meet and discuss plans most suitable for their community. The Pharmacy Chairman would designate certain drugstores as collection stations and would be responsible for delivering urine specimens to hospitals or other areas where testing could be done. In locations where hospitals are not available the local doctors would presumably be willing to do the testing.

The Maine Medical Association has participated in Diabetes Detection Week since its initiation several years ago and many thanks are due to members who have given their time each year. Much credit is also due to nurses in the industrial plants from whom reports have been received annually. There have been an increasing number of urines examined each year. In 1956, six thousand specimens were examined, with fifty-six positives, which is far below the number that we hope to do this year. As far as could be determined, blood sugars on positive reactors were done routinely only in the Portland area, where money was made available through certain private sources to hospitals† and through the generosity of the Cumberland County

*Chairman: Diabetes Committees, Cumberland County Medical Society and Maine Medical Association.

†During Detection Week, both the Maine Medical Center Diabetes Detection Clinic and Mercy Hospital did blood sugar analyses.

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ACHRO

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control, with minimal side effects, over a wide variety of infections - reasons why ACHROMYCIN is one of today's foremost antibiotics.

Medical Society. At the present time this can hardly be expected statewide but it is hoped that some day this will be possible. It is needless to say that much time and energy is required to put on a successful drive. Arrangements for publicity of the drive through newspaper articles and spot announcements on radio and television must be made. Extra work is forced upon our already over-taxed laboratories. All have, however, given freely of their time. This problem of overcrowding of the hospital laboratories with urine specimens might be eliminated if all towns and cities had the same community spirit as exists in Sanford where Dr. Melvin Bacon, with the aid of the town physicians,

nurses and community workers, puts on a yearly successful Diabetic Fair and uses the Town Hall as central headquarters for all exhibits and examinations.

An additional task during each drive is to be sure that all specimens bear the name and address of both the patient and the family physician to whom all positive reports should be sent.

Let us hope that the 1957 Diabetes Detection Drive will be a successful one. It is good public relations for both the physicians and pharmacists, and all members should be willing participants, keeping it at all times within good medical ethics.

12 Deering Street, Portland, Maine

A County Observes National Diabetes Week*

MELVIN BACON, M.D.

This year National Diabetes Week, sponsored by the American Diabetes Association, will be observed country wide from November 17-23, 1957. It will be the Tenth annual observance by this association. The purpose is for the public education and detection of Diabetes. It is believed that there are one million known diabetics in the United States and another million unknown diabetics. It is this latter group that this association through its affiliates is attempting to discover. The York County Medical Society under the directive of its physician members plan an all out drive and observance of this period for the third year. Because of the success attained in 1954 and 1955 in this endeavor it was deemed of interest to present the plan of this group for this year.

Eighteen physicians have been selected to organize programs for their respective areas. These are as follows:

Leopold A. Viger, M.D., Biddeford
 Melvin Bacon, M.D., Sanford
 A. M. Bonanno, M.D., Berwick
 L. Carpenter, M.D., Limerick
 J. Robert Downing, M.D., Kennebunk
 S. Dunton Drummond, M.D., Bar Mills area
 Robert F. Ficker, M.D., Kennebunkport
 Herbert J. Hopkins, M.D., Old Orchard
 Leon R. Jellerson, M.D., North Berwick
 Charles W. Kingborn, M.D., Kittery
 Maurice Ross, M.D., Saco
 Alexander W. Magosci, M.D., The Yorks
 Paul C. Marston, M.D., Kezar Falls, Cornish areas
 Marion A. K. Moulton, M.D., West Newfield
 John J. Murphy, M.D., South Berwick

Carl E. Richards, M.D., Alfred
 Gerald R. Smith, M.D., Ogunquit
 Ruth E. Endicott, M.D., Wells

Plans call for the free examination of urine for the detection of Diabetes by all the members of this society and the various hospitals in the county, during this period. These hospitals are:

Buxton-Hollis Hospital, Bar Mills
 Goodall Hospital, Sanford
 Notre Dame Hospital, Biddeford
 Trull Hospital, Biddeford
 Webber Hospital, Biddeford
 York Hospital, York Village

These specimens will be tested with the Benedict, Galatest, Testape, or Clinitest methods. Public Health Nurses will conduct the detection drive in areas where there are no physicians and they will distribute diabetic literature. These towns or areas include the following: Acton, Dayton, Eliot, Lebanon, Limington, Lyman, Shapleigh, and The Waterboros. In addition, all those showing positive urine tests for sugar will have the opportunity to have blood sugars done at any of the aforementioned hospitals at nominal fees during this period on referral of their personal physicians. In addition, all over the county, posters will be placed and will indicate whom to see and where to go to be tested. Diabetic literature will be distributed at each physician's office, at the various hospitals in the county and at various meetings. Thousands of diabetic pamphlets were given out in 1954 and 1955. Trailer movies will be shown at various theaters in the county. These are located in Sanford, Kennebunk, Biddeford and Saco, Maine. In 1954 and 1955 thousands of people saw a similar film at the various theaters. Radio programs, over station WIDE, Biddeford, Me., WWNH, Rochester, N. H., and WHEB, Portsmouth, N. H., will feature

*Committee on Diabetes, York County Medical Society, Chairman M. Bacon, M.D., M. K. Moulton, M.D., and C. E. Richards, M.D.

talks and spot announcements on Diabetes. Several physicians will participate in these programs. An all-out drive to find the unknown Diabetic will be conducted.

We will have an interesting program set up in Sanford. Judging from the public response with regard to attendance and offers to help at a recent Health Fair,⁽¹⁾ held in Wells, Maine, the results should be very impressive. The Sanford plan calls for four detection centers strategically located at various parts of town where we will have the personnel to conduct the detection program. In addition, diabetic literature, as well as material on Tuberculosis and Heart Disease, will be distributed at these spots. Several collection depots will be in evidence where people may leave their

specimens of urine to be tested. Furthermore, it is tentatively planned to have a speaking program at one of the various halls in town for the Diabetic and general public. The various other features of the county program as a whole will also be utilized.

This paper presents, in brief, a plan whereby a County Medical Society may carry on a program on Diabetes during National Diabetes Week. The purpose is to educate the public concerning Diabetes and to stimulate diabetes detection.

(1.) Bacon, M.; A Health Fair To Be Held In Wells, Maine. J. Maine Medical Assoc., 48:139 April, 1957.

257A Main Street, Sanford

Maine Medical Association

SPECIAL COMMITTEES — 1957-58

The following Special Committees for 1957-1958 have been appointed by the President,
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Committee On Alcoholism

Gilmore W. Soule, M.D., 22 White St., Rockland, Chairman
Continued on page 374

similar measures sponsored by Senator James E. Murray (D., Mont.) and Rep. John Dingell (D., Mich.).

Medicare — Flu Vaccine

A directive by Maj. Gen. Paul I. Robinson, Medicare supervisor, says flu vaccination is an outpatient procedure, hence is not covered by Medicare.

Dr. George Dana to Direct New Center in Manhasset

A good friend and strong supporter of Maine medicine — George W. Dana, M.D. — has resigned from his position as Medical Director of Bingham Associates Fund for Maine and accepted a position as Director of the North Shore Hospital, Manhasset, Long Island.

Dr. Dana is a graduate of Dartmouth College and Cornell University Medical College. Military service — Patton's Third Army. Trained in clinical medicine at Johns Hopkins University and was later named Associate Dean of the Johns Hopkins University School of Medicine.

It is planned for the North Shore Hospital in suburban New York to be the nucleus of a growing medical center.

Woman's Auxiliary Aids AMEF

Notice from Chicago rates a "well done" to the Woman's Auxiliary of the MMA for its continued support of the American Medical Education Foundation. The several county auxiliaries have already raised and sent to AMEF \$250.94 this year.

Hospital Statistics

The August issue of the *Journal of the American Hospital Association* carries some interesting hospital statistics for the fiscal year ending September 30, 1956.

At the end of that period there were 6,966 hospitals in the continental United States; 1,607,692 beds; an average daily census of 1,355,792; admissions totaling 22,089,719; assets of \$13,035,068,000; total expenses of \$6,016,859,000; payroll expenses of \$3,948,937,000, and total personnel of 1,374,704.

Legion Stands Firm on Full Medical Benefits

Rift between American Legion and AMA on provision of medical and hospital benefits to veterans for nonservice-connected illness continues to widen. Legion's recent convention in Atlantic City adopted a resolution reaffirming support of Veterans Administration health services to n-s-c cases unable to afford private care. It also went on record for a comprehensive survey of hospital beds and domiciliary facilities that are available to veterans suffering from chronic diseases. National Rehabilitation Commission is directed to conduct the survey.

In his address to the convention, VA Administrator Harvey V. Higley criticized organized medicine for opposing hospitalization privileges to the n-s-c veteran.

He went on to propose construction of an additional 3,300 mental and general medical and surgical beds, chiefly in Florida, Texas and California. At the same time, he said, steps could be taken to close out 3,900 tuberculosis beds as a balancing measure.

Statistical summary of VA activities in August, just published, discloses that average daily patient load was 113,399. This was a gain of 900 over previous month and practically same as average for August, 1956. About two-thirds were n-s-c cases.

Hospitals Main Factor in Rise in Health Care Cost

Newly issued quarterly index of consumer prices depicts graphically the disproportionate influence of hospital rates on over-all costs for health services. Month after month, "Medical Care" has the highest price index of all essential items and services. But when hospital charges and hospitalization prepayment premiums are excluded, "Medical Care" drops to a level in close alignment with housing, personal care and miscellaneous goods and services.

Item-by-Item Breakdown. In June, 1957, the composite consumer price index was 120.2. "Medical Care" ranked first among the various categories, at 137.9, but figure fell to 125.9 when hospital charges and premiums were taken out. Following are index figures for all component items as averaged in 1955, 1956, March '57 and June '57:

	1955	1956	March '57	June '57
MEDICAL CARE	128.0	132.6	136.4	137.9
Medical care less drugs	131.4	136.4	141.0	141.8
Medical care less hospital rates & group hosp'tn	118.5	121.9	124.9	125.9
Physicians' fees	123.3	127.0	132.3	132.5
Genl. practitioners' fees	124.3	128.4	134.4	134.4
Office visit	123.7	127.1	131.2	131.4
House visit	120.7	125.3	133.5	132.9
Obstetrical care	139.8	144.5	148.4	150.2
Surgeons' fees	116.4	118.2	119.9	120.9
Appendectomy	115.2	117.6	119.6	119.6
Tonsillectomy	119.2	120.0	121.0	124.2
Dentists' fees	122.0	124.4	126.6	127.4
Fillings	121.2	123.6	125.7	126.7
Extractions	126.1	128.4	131.0	131.5
Optometric and glasses	109.5	111.2	115.4	116.2
Hospital rates	164.4	173.3	183.6	185.4
Men's Pay Ward	173.9	183.8	198.0	199.6
Semiprivate room	160.0	170.0	179.3	180.9
Private Room	157.7	164.4	171.3	173.4
Group hospitalization	115.5	122.7	126.7	129.2
Prescriptions and drugs	111.2	113.7	115.2	117.0
Prescriptions	117.3	121.0	123.0	125.3
Aspirin tablets	100.0	100.7	101.3	101.9
Milk of magnesia	114.1	123.0	127.7	135.4
Multiple vitam. concn.	101.1	101.4	101.7	101.7

Civil Service Chairman Wants Health Insurance

In his first public expression on the subject since

becoming a member of the Eisenhower "little Cabinet," Chairman Harris Ellsworth of Civil Service Commission has come out strongly for contributory medical care and hospital insurance for Federal employees and families. As a House member for many years, the conservative Republican Ellsworth viewed government-sponsored health insurance with dark suspicion when he was on Commerce and Rules Committees. On September 10, addressing a union meeting here, the new CSC chairman left no doubt he is squarely behind Administration's campaign for this fringe benefit.

"Because of the pressure of other business, the Congress was not able to give its attention to this bill during the past session," Ellsworth said. "I feel certain, however, that it will be a very live issue in the next session, and we in the Civil Service Commission are as hopeful as you are that health and medical insurance will be added to the list of Federal employees' benefits before another year has gone by."

PHS Releases Funds for 798 Nurse Traineeships

Public Health Service disclosed it has allocated nearly \$3 million among schools of nursing and public health to support 798 traineeships in 1957-58. Awards would have been made several weeks ago but for delay resulting from freeze on funds imposed by Budget Bureau. This is second year of this program, which seeks to increase supply of nurses qualified for teaching and administrative duties.

Drinking Denatured Alcohol Causes Hypoglycemia

Drinking denatured alcohol may produce an illness similar to that of the "vomiting sickness of Jamaica," which is caused by eating wild berries, an Alabama physician said.

A severe and sometimes fatal drop in the amount of sugar in the blood is a sign of both illnesses, he said in the September 7 *Journal of the American Medical Association*.

Just why such a drop in blood sugar level, called hypoglycemia, results from drinking denatured alcohol or eating one kind of wild Jamaican berry is unknown, Dr. William J. Hammack, Birmingham, said.

It may be associated with malnutrition, a frequent occurrence in chronic alcoholism, in which the liver is damaged. The liver is no longer able to perform its normal breakdown of sugar into simpler components that can be used by the body.

Whatever the cause of hypoglycemia, it is a "grave medical emergency" because of the possibility of rapid brain damage or death. It must be recognized and treated immediately, Dr. Hammack said. Intravenous administration of dextrose (a simple sugar) solution helps relieve the condition.

Dr. Hammack studied 36 patients admitted to University and Veterans Administration Hospitals, Birmingham, after they had drunk a shellac solvent (trade named Solox). The solvent's main ingredients are pure ethyl alcohol and denatured wood alcohol.

Solox intoxication is seen rather frequently in large city hospitals, he said. Most patients are chronic alcoholics and many drink the solvent for years before becoming acutely ill. Many are severely malnourished as a result of substituting alcohol for food.

The patient is usually unconscious on admission to the hospital. If he is conscious, he may complain of blurred vision, intense abdominal pain, and burning of the eyes. The breath has a characteristic foul, chemical odor, similar to wood alcohol.

Other symptoms may include rigidity of limbs, respiratory difficulty, extreme irritability, convulsions, acidosis (in which the body's acid-alkaline balance is disturbed), and hypoglycemia. The central nervous system symptoms are apparently caused by the lack of blood sugar.

With prompt treatment, the patient usually recovers immediately; however, physicians must be alert to possible complications such as pneumonia, Dr. Hammack said.

U.S. Will Buy Radiation Equipment for Colleges

Professional schools, colleges and universities are coming in for new Federal subsidies. U. S. Atomic Energy Commission is launching a program which will make them eligible for up to \$250,000 each in grants for the purchase of specialized radiation equipment and teaching aids in radio-biology. Schools of medicine, public health, veterinary medicine, pharmacy and agriculture are prospective recipients, together with departments of biophysics and biology in colleges and universities. The new enterprise is an extension of AEC's broad activities to stimulate application of nuclear technology in the life sciences.

Information is obtainable upon request to Director, Division of Biology and Medicine, U. S. Atomic Energy Commission, Washington 25, D. C.



DEAN H. FISHER, M.D.
COMMISSIONER

State of Maine

Department of Health and Welfare

Tuberculin Survey In Aroostook County

MARGUERITE C. DUNHAM, M.D., District Health Officer

The purpose of this article is to provide information about the planning and execution of a tuberculin survey, and about levels of tuberculin sensitivity in a specific age group, with the hope that the information may be of value to the private physician in any tuberculin testing he may do in his private practice.

A tuberculin survey was conducted by the Department of Health and Welfare in the spring of 1957. The objective of the survey was to obtain an indication of the extent of tuberculous infection in families of Aroostook County as compared with degree of infection in other parts of Maine. Surveys were conducted in the test area, certain Aroostook communities, and in a control area, several Southern Maine communities. In the test area, two representative towns were selected, and control groups were chosen which were similar to the test area in population types, occupational, economic, and social factors. In Aroostook County tests were carried out in Madawaska and Houlton, and in Southern Maine, in Belfast, Oakland, Skowhegan and Warren.

The age of the test group was specified as first graders. This group was practical to test and relatively protected from exposure to tuberculosis outside of the home environment. Thus a reactor in this age group would presumably have been exposed only in the home and the number of reactors in this group would reflect the amount of tuberculosis in the adult population.

PRELIMINARY ORGANIZATION

As the first step in the survey, planning meetings were held in the communities, at which decisions were made as to method of testing to be used, materials, grouping of students, and method of handling follow-up of reactors. Town health nurses, local physicians, school personnel and Department representatives participated in these meetings. The plans formulated here were presented in letters to all local physicians, and to the County Medical Society.

MATERIALS USED

For the test material, P.P.D. (Purified Protein Derivative) was used. Test strength of 10 Tu* (0.0002mg. per 0.1cc or intermediate strength) was selected and administered intradermally. This preparation and strength was chosen in an effort to avoid the increasing percentage of false negatives shown to occur with a lower strength, and of false positives with the higher strengths. (See Table I.) These false positives are thought to be due to a non-specific sensitivity reaction. Patch tests, it was felt, were too unreliable for this special study.

PROCEDURE

Consent slips were distributed by the town nurse and teachers to each first grader in the survey towns. On return of these, check lists were drawn up, to be followed during the administration of the tests. Arrangements were made with school personnel for children to be transported to a central clinic site where tests were administered by the district health officer and local town nurse.

Individual syringes and needles were used to inject a dose of 0.1cc in the flexor surface of the left forearm. Tests were read in 48 hours by the district health officer, and judged by the criterion of induration. A positive test was one of 5 mm. or more of induration. An indurated area of 0-5 mm. was read as doubtful, meaning not that it was possibly positive or possibly negative. Such a test is positive without doubt, but the reaction is due possibly to tuberculin sensitivity, possibly to non-specific sensitivity and is impossible to differentiate between the two. In cases of no induration the test was read as negative, regardless of presence or absence of redness.

*Tu—Tuberculin Units — a method of designation of strength of tuberculin solution recently devised and recommended for general use.

TABLE I — TUBERCULIN TEST EQUIVALENTS

<i>Tuberculin Units</i>	<i>OT</i>	<i>PPD</i>
1	0.1 ml. of 1:10000 "0.01 mg."	0.00002 mg. "First Strength"
5		0.0001 mg. "Intermediate Strength"
10	0.1 ml. of 1:1000 "0.1 mg."	0.0002 mg. "Intermediate Strength"
100	0.1 ml. of 1:100 "1.0 mg."	
250		0.005 mg. "Second Strength"

TABLE II — RESULTS OF TUBERCULIN SURVEYS

DISTRICT	AROOSTOOK			SOUTHERN MAINE		
<i>Towns</i>	<i>Houlton</i>	<i>Madawaska</i>	<i>Belfast</i>	<i>Warren</i>	<i>Oakland</i>	<i>Skowhegan</i>
Total in 1st. grade	182	162	122	34	69	124
Total tested	166	161	117	34	65	124
% Tested	92	99	96	100	94	100
No. Negative	161	161	115	34	63	122
% Negative	97.0	100	98.3	100	98.1	98.4
No. Positive	5	0	2	0	2	2
% Positive	3.0	0	1.7	0	2.9	1.6

INTERPRETATION OF RESULTS

Since the object of the study was to compare incidence of tuberculosis in Aroostook County with incidence in the rest of Maine and in the nation, it was necessary to determine standards against which to judge the Aroostook results.

It is known that nationally for such an age group, rates of 1-3% reactors are usually found. It was decided that rates of as high as 3% in Aroostook County would not be considered alarming in this predominantly rural area with its relatively high proportion of poor housing, nutrition and general health conditions.

According to the data presented in Table I, there is no evidence to support the contention that Aroostook County has an abnormally high tuberculosis rate. Rates in Aroostook County range from 0%-3.%. In Southern Maine, the range is from 0-2.9% — a difference that is insignificant.

A further point of interest to be drawn from these data is the fact that the rate in the Northern Aroostook Valley town of Madawaska is lower than that in Houlton, in Southern Aroostook. This again tends not to support the prevalent feeling of some persons that tuberculosis is rampant in the "valley," and suggests that tuberculosis in Aroostook County is not deviating from its pattern in the remainder of the world of afflicting the poor urbanites more than the poor farmers.

Admittedly the sample surveyed is small. It must and will be enlarged before final conclusions are drawn, but tendencies are evident and direction can be given by this study to future control work, by pointing up areas of high incidence within the county, areas in which control measures can be intensified. The survey thus helps to establish more clearly the diagnosis, the first and most essential step in the treatment of the patient.

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One tablet of Rolicton, b.i.d., is usually adequate to maintain patients free of edema after the first day's dosage of four tablets. Some patients respond well to one tablet daily. G. D. Searle & Co., Chicago 80, Illinois. Research in the Service of Medicine.

1. Settel, E.: Rolicton[®] (Aminoisometradine), a New, Nonmercurial Diuretic, *Postgrad. Med.* 21:186 (Feb.) 1957.
2. Assali, N. S.: Personal communication, May 28, 1956.

SEARLE

Normal glomerulus, showing arteriole musculature, glomerular epithelial podocytes, and "epitheloid" muscle cells of vas efferens.

Tuberculosis Abstract

In a statement of the committee on therapy of the American Trudeau Society, it has been recommended that "regardless of which of the regimens is selected for initial therapy *continuous* antimicrobial therapy should be maintained for long periods of at least twelve months, and most often for eighteen months or even longer. When serious intolerance or toxicity develops to one drug or pair of drugs, other antimicrobial therapy should be substituted."

Reference: Committee on Therapy of the American Trudeau Society; The Journal of the American Medical Association, Volume 164, No. 6, Page 717, June 8, 1957.

County Society Notes

HANCOCK

September 11, 1957

A regular meeting of the Hancock County Medical Society was held at the Hancock House in Ellsworth on Wednesday, September 11. There were fifteen members present.

The meeting was opened by the President, Robert F. Russell, M.D., of Penobscot. The minutes of the last meeting were read and approved.

George M. Sanger, M.D., of Ellsworth, was elected to membership in the society.

The following motions were passed:

That the surplus funds from the polio clinics be used to give a free third injection to those who received the first two injections, and that any further surplus be turned back to the National Foundation For Infantile Paralysis.

That Asiatic influenza vaccine be distributed according to the discretion of the individual physician in each area.

That participation in the Diabetes Week program by this society be indefinitely postponed.

Walter W. Herbert, M.D., of Ellsworth, showed X-rays of several interesting cases which were presented by members of the society.

Arthur M. Joost, M.D.
Secretary

PISCATAQUIS

September 19, 1957

The annual business meeting of the Piscataquis County Medical Society was held on Thursday, September 19 at the Birches, Rockwood, Maine.

Officers elected for the coming year are:

President, James H. Johnson, Jr., M.D., Milo

Vice-President, Charles H. Lightbody, M.D., Guilford

Secretary-Treasurer, Linus J. Stitham, M.D., Dover-Foxcroft

Delegate to the Maine Medical Association, Ralph C.

Stuart, M.D., Guilford. Alternate: Dr. Stitham.

Board of Censors, George C. Howard, M.D., Guilford

Legislative Committee, John B. Curtis, M.D., Milo

It was agreed to cooperate with the recommendation of the Bureau of Health that administration of Asian Flu Vaccine be confined to those people in key positions. It is hoped to have it available for the general public sometime after January.

A committee to investigate possible changes in the present 1948 fee schedule was appointed with Dr. Lightbody as Chairman.

George J. Robertson, M.D., of Waterville, presented a very informative paper on Rheumatoid Arthritis.

The Woman's Auxiliary to the Piscataquis County Society held a meeting at the same time.

The following members and their wives were present, Drs. Stuart, Nickerson, Lightbody, Howard, Curtis, Johnson, Bradbury, Card and Stitham. Guests included, in addition to the speaker, Dr. and Mrs. Odd Nielson of Dexter and Dr. and Mrs. Howard F. Hill of Waterville.

Linus J. Stitham, M.D.
Secretary

YORK

Marion K. Moulton, M.D. of West Newfield, President of the York County Medical Society, has been named a member of the governing council of the New England Tuberculosis

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Conference. Dr. Moulton was elected to this position at a recent meeting of the conference in Groton, Massachusetts.

NEW MEMBERS

AROOSTOOK

Ray A. Proctor, M.D., 60 Vesta Circle, Caribou

HANCOCK

George M. Sanger, M.D., Eastern Memorial Hospital, Ellsworth

CHANGE OF ADDRESS

KENNEBEC

Edward L. Foote, M.D.

From — Veterans Administration Center, Togus

To — 2138 Peabody Lane, Louisville, Kentucky

PENOBSCOT

George B. Weatherbee, M.D.

From — Hampden Highlands

To — Main Street, Hampden

DECEASED

CUMBERLAND

Harold V. Bickmore, M.D., Cape Elizabeth, on September 10, 1957.

OXFORD

Eugene M. McCarty, M.D., 82 Maine Avenue, Rumford, on May 3, 1957.

WALDO

Eugene D. Tapley, M.D., 17 High Street, Belfast.

Announcements

Ob-Gyn Group Formed

At a dinner meeting at Brunswick's Hotel Eagle on September 6, 1957, representative Ob-Gyn men across the state made plans for the formation of an Ob-Gyn society for Maine. Membership is planned to include all those whose interest is primarily Ob-Gyn. Information may be obtained by a direct communication with Edward M. Southern, M.D., 2 School Street, Waterville, Maine.

Arthritis and Related Disorders Post-Graduate Courses

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585A Orthopedic Aspects of the Treatment of Rheumatic Disorders. Tuesdays, 9:00 a.m. to 5:00 p.m., March 18 through April 1, 1958. Designed to follow immediately after course 544A above. Tuition \$50.00

586A Orthopedic Aspects of the Treatment of Rheumatic Disorders. Wednesdays from 4:00 p.m. to 6:00 p.m., October 9 through December 11, 1957. Tuition \$50.00

All applications and inquiries concerning admission to these courses should be addressed to the office of the Associate Dean, New York University Post-Graduate School, 550 First Avenue, New York 16, New York.

Central Maine General Hospital, Lewiston, Maine
Refresher Course in Hematology

Speakers and Subjects

November 6, 1957 — Mario Baldini, M.D.

Assistant Professor of Medicine, Tufts University School of Medicine; Attending Staff Member and Associate Director of the Blood Research Laboratory, New England Center Hospital.

Erythrokinetics — Bone Marrow Production and Hemolysis

November 13, 1957 — William Dameshek, M.D.

Professor of Medicine, Tufts University School of Medicine; Senior Physician and Chief of Hematology, New England Center Hospital.

Immuno-hematology

November 20, 1957 — Fernando A. Rubio, Jr., M.D.

Instructor in Medicine, Tufts University School of Medicine; Associate Staff (Hematology), New England Center Hospital.

The Abnormal Hemoglobin Syndromes

November 27, 1957 — Robert Goldstein, M.D.

Clinical Associate in Medicine, Harvard Medical School; Assistant Visiting Physician and Associate in Medical Research, Beth Israel Hospital.

The Hemorrhagic Disorders

December 11, 1957 — William Dameshek, M.D.

Polycythemia and Related States

December 18, 1957 — Norma B. Granville, M.D.

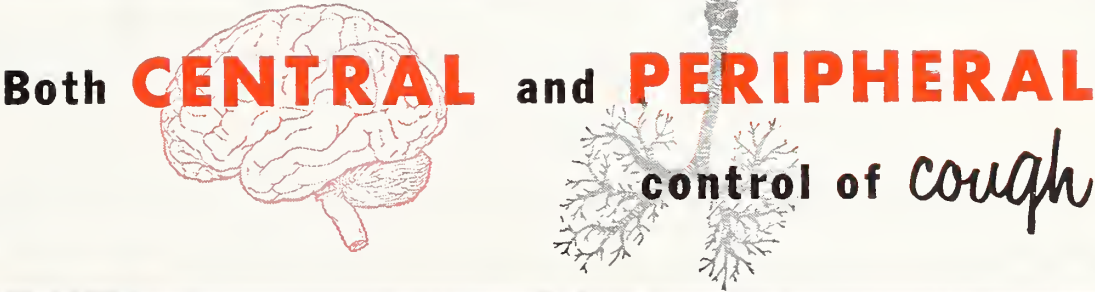
Instructor in Medicine, Tufts University School of Medicine; Research Fellow in Hematology, New England Center Hospital.

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The Fourth Bahamas Medical Conference will be held at the Fort Montagu Beach Hotel in Nassau, Bahamas, December 1-15, 1957.

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\$14.00 per day, per person, two in one room;

\$18.00 per day, per person, one person in one room.

These rates include room and three meals: breakfast, lunch and dinner.

Reservations should be made by writing *directly* to Mr. John L. Cota, General Manager, Fort Montagu Beach Hotel, Nassau, Bahamas. Ten cent stamp for air mail!

The registration fee is \$75.00. Check should be made out to the order of "Bahamas Medical Conference," and should be sent to Mr. Cota when making reservations.

MAINE MEDICAL ASSOCIATION — SPECIAL COMMITTEES 1957-1958

Continued from page 363

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Respiratory Control In Chronic Pulmonary Emphysema

A Compromise Adaptation[†]

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In almost all aspects of the management of chronic pulmonary emphysema a keen appreciation of the physiological mechanisms assures a rational therapy. For the purposes of this presentation the following considerations will be briefly discussed, — this list is admittedly biased towards those aspects which have been of particular interest to the author.

1. *Physiologic Considerations.*

- a. In chronic pulmonary emphysema with alveolar hypoventilation there is a decrease in sensitivity

of the respiratory center to carbon dioxide. This alteration in the control device tends to perpetuate the status of respiratory acidosis.

- b. The central respiratory depression may be so complete that respiratory control is maintained solely through hypoxic stimulus acting via peripheral chemoreceptors.
- c. Due to bronchial obstruction the work of breathing is markedly increased, particularly during hyperventilation. This increase in metabolic oxygen requirement and carbon dioxide production tends to negate any effect of the hyperventilation to lower the CO_2 tension.
- d. The maintenance of chronic respiratory acidosis may be of ultimate benefit to the patient by making more oxygen available to systemic tissues than would otherwise be possible if an attempt were made to maintain the CO_2 tension normal.

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†The experimental work referred to from the author's laboratory was supported by a research grant from the National Heart Institute, National Institutes of Health, U.S. Public Health Service.

2. Practical and Therapeutic Considerations.

- The central respiratory depression of chronic CO_2 retention creates a situation in which drugs that depress respiration are dangerous. Great caution should be exercised in prescribing opiates, sedatives, and hypnotics.
- To a certain extent the respiratory center depression is reversible, particularly if the CO_2 retention has not been long standing. To this end, passive hyperventilation in a respirator has been effective in restoring normal respiratory responsiveness.
- Extreme caution should be exercised in the administration of oxygen to cyanotic patients with emphysema if they also have CO_2 retention. Prolonged apnea due to the removal of the sole respiratory stimulus may terminate fatally. Intermittent administration with close observation is recommended.
- A major factor in the increased work of breathing in emphysema originates through bronchial constriction and obstruction. Since the increase in work of breathing works to the detriment of both the effectiveness of hyperventilation to lower the CO_2 tension and the available supply of oxygen to systemic tissues, any technique to lower air way resistance alleviates a primary factor in the pathophysiology of emphysema. Bronchodilators and agents which minimize mucous plugging are obviously of distinct therapeutic value. The mechanisms on which these considerations are premised and speculations with regard to possible "reasons" for natural adaptations may be developed along the following lines.

In the advanced stages of chronic pulmonary disease the patient is subjected to prolonged periods of a combined hypoxia and hypercapnia; and it is perhaps not surprising that there are adaptations secondary to both. What is surprising is that the most striking adaptive change is one which, though of immediate benefit, results in an alteration of respiratory control that ultimately places the life of the patient in jeopardy. It is indeed a curious quirk of nature that by the adaptation to hypoventilation the initiating condition is further aggravated and thus a most "vicious circle" is established.

For normal man residing at sea level the control of ventilation is almost solely determined by the tension of carbon dioxide in equilibrium with the cells of the medullary respiratory center. Only during episodes of hypoxic stress is the second line of defense activated — the peripheral chemoreceptors located in the carotid and aortic bodies and sensitive to the tension of oxygen in the arterial blood.

Because the adaptations to chronic hypoxia are well known, and the respiratory mechanism does not appear to undergo any profound change due primarily to oxygen want, we need not consider it at any length. The retention of carbon dioxide may be regarded as the

single most effective index of alveolar hypoventilation.

Alveolar ventilation is the difference between expired minute volume and dead space ventilation. Dead space ventilation is the product of dead space volume and respiratory frequency. Apparent respiratory stimulation which is manifest only as an increase in respiratory frequency may result in alveolar hypoventilation because only dead space ventilation has been enhanced. The level of alveolar ventilation is precisely governed by the tension of carbon dioxide (and H^+) at the respiratory center. On the other hand, the level of carbon dioxide in the alveolar air and arterial blood is directly proportional to the quantity of carbon dioxide metabolically produced per unit of time and inversely proportional to the magnitude of alveolar ventilation. That is to say, for any given level of metabolic CO_2 production, the tension in blood and alveolar air is ventilation limited. Such a convenient reciprocal relationship allows a precise calculation of the relative level of alveolar ventilation if the alveolar gas tension is known. For a constant metabolic CO_2 production, if the CO_2 tension falls to half, alveolar ventilation must have risen to twice control value. These values of alveolar ventilation, relative to normal or control, are referred to as the alveolar ventilation ratio. With these relationships in mind it is possible to see clearly the first steps in the adaptation to chronic pulmonary disease characterized by hypoventilation.

Figure 1 indicates CO_2 blood dissociation curves which are approximately correct for normal man. The abscissa labelled at the top shows the relative level of alveolar ventilation which must pertain for the CO_2 tensions indicated, it being assumed metabolic activity

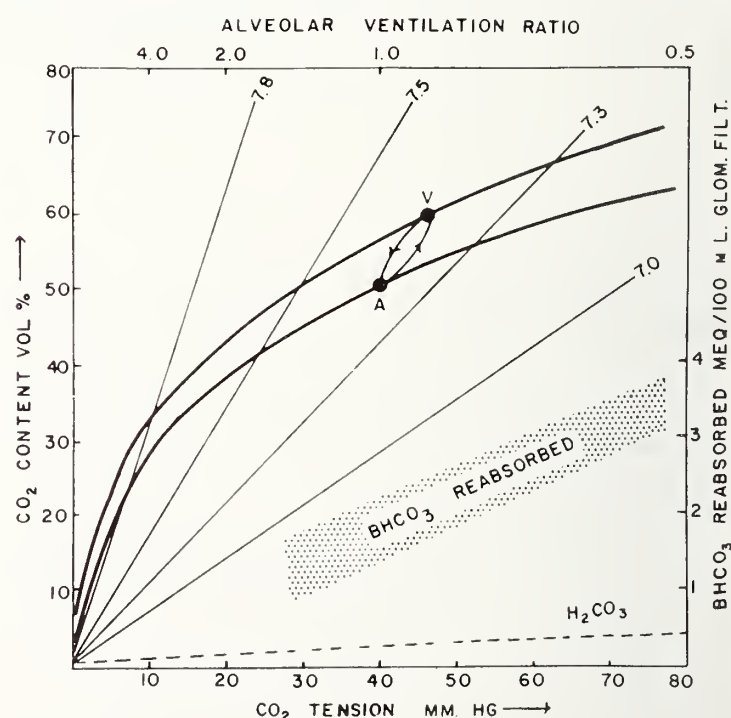


FIG. 1. CO_2 dissociation curves for man showing normal Arterial and Venous points. Iso — pH lines are calculated from Henderson-Hasselbalch equation. The range of renal response in conserving bicarbonate is indicated from data in the literature (1, 2).

remains constant; pH lines calculated from the Henderson-Hasselbalch equation radiate from the origin. The initial change precipitated by alveolar hypoventilation from any cause, is the movement of the alveolar point along the dissociation curve to the right. The ratio of carbonic acid to bicarbonate is now in excess of normal, the pH falls, and the patient is in an acute, uncompensated, respiratory acidosis. To combat the acidosis there is a prompt mobilization of some of the total body buffer stores, and the kidney begins to conserve bicarbonate.^(1,2) This latter process appears to be almost solely regulated by the CO_2 tension, not the pH, and may thus be conveniently portrayed on the same diagram. If bicarbonate is retained until the normal ratio of carbonic acid to bicarbonate is re-established, the pH returns to normal and the patient has a compensated respiratory acidosis. His dissociation curve will now be above normal because of the excess of buffer.

This immediate process is relatively well understood and may be envisioned as the body's attempt to preserve the alkalinity of the blood in a situation in which a morbid process has limited the elimination of carbonic acid (hypoventilation). What follows next is not so clear.

It has long been known that patients with chronic pulmonary emphysema show a minimal ventilatory response to CO_2 added in the inspired air.^(3,4) More recently it has become clear that this is not a peculiarity unique to emphysema but may be seen in individuals without pulmonary disease who have excessive levels of bicarbonate and carbon dioxide (metabolic alkalosis).^(5,6) Such observations lend credence to a concept that the failure of ventilatory response is indeed more closely related to the bicarbonate (and CO_2) level than to the disease itself. Further, it may be shown that the extent to which the sensitivity of the respiratory center has been depressed is positively correlated with the degree of CO_2 retention.⁽⁵⁾ With this in mind it is encouraging to note that a return in respiratory center sensitivity accompanies a lowering of the CO_2 tension and bicarbonate levels in many individuals, though in some patients with long standing CO_2 retention this process does appear to be of an irreversible nature.⁽⁷⁾

The mechanism of the depression in respiratory drive which attends the rise in blood CO_2 content remains uncertain. A simple physico-chemical explanation has the merit of simplicity, but is not in full accord with all the facts. In its simplest form this explanation states that due to the rise in buffering capacity of the blood (elevated bicarbonate) any added CO_2 to the inspired air exerts relatively less effect than normal because the change in pH is minimized. Such an explanation leaves unresolved the failure of some patients to revert to normal in spite of reduction in CO_2 , although it should be pointed out that all measurements to date neglect consideration of intracellular changes which may not

always parallel those occurring in blood. Further, it cannot be denied that mechanical factors, particularly bronchial obstruction, may play a significant role in determining ventilatory response to any stimulus.

The essential point is that, whatever the mechanism, once these adaptations to hypoventilation have been initiated, the process tends to be perpetuated indefinitely, since by the adaptation the patient is becoming progressively less sensitive to the normal respiratory stimulus. He tends then never to respond in a way which would ultimately restore the CO_2 tension to normal.

A very important practical consideration in these patients is a keen appreciation of the tenuous status of their control mechanism for ventilation. Central depression may be so prominent that the only respiratory stimulus arises from afferent impulses originating in the carotid and aortic chemoreceptors. Since these areas are almost exclusively responsive to oxygen lack it is apparent that life in such patients may be dependent on the maintenance of a chronic hypoxemia. This unusual state is dramatically apparent when the hypoxemic patient becomes apneic during oxygen therapy.⁽⁸⁾ If not carefully observed, and the oxygen removed, these patients pass into an irreversible apnea, convulsions, coma, and asphyxic death, simply because there is not stimulus to respiration. To give any cyanotic patient who has chronic CO_2 retention pure oxygen to breathe is to court disaster unless scrupulous attention is paid to his immediate response.

A second practical consideration in the management of chronic hypoventilation is an appreciation of the extreme sensitivity of their respiratory center to drugs which have a respiratory depressant action.^(9,10) It is probably incorrect to refer to this problem as an increase in sensitivity, but it is rather an indication of a profoundly depressed center which, when exposed to an added depressant, is essentially anesthetized. Small doses of opiates may be fatal and even the hypnotics and sedatives introduce sufficient depression, particularly during sleep, to constitute a serious hazard.

The manner in which the initial event in CO_2 retention is brought about has never been clear. It is certainly insidious and probably occurs as a series of incomplete recoveries from repeated respiratory stresses which arise through increased bronchial obstruction (infection) or added metabolic CO_2 production (exercise). A succession of irreversible steps over the years leads eventually to the full picture referred to above.

It is intriguing to the physiologist to consider the design of nature in an adaptation that works to the detriment of the survival of the organism. At least two possibilities exist which may help explain the "purpose" of the adaptation and these two considerations may not be unrelated.

In the first place the decrease in sensitivity of respiratory response may also be considered in relation to a decrease in "awareness" of a need for hyperventilation. Dyspnea may be thought of as a conscious

awareness of an unpleasant effort associated with breathing. Quantitatively, the stimulus exceeds the ability to respond. In the adaptation to chronic hypoventilation the response is minimal because the central nervous receptor mechanism does not transduce the stimulus into efferent messages of the normal order of magnitude. It has always been apparent that patients with chronic pulmonary emphysema can breathe more than they do. The regulatory mechanism is set at a lower level than normal. By this setting the "threshold" of dyspnea is raised.

A second factor which is of great theoretical and practical importance has recently been suggested by Riley.⁽¹¹⁾ The oxygen consumption of respiratory musculature in normal man is but a small fraction of the total body oxygen consumption.⁽¹²⁾ In pulmonary emphysema or any other situation associated with bronchial airway obstruction the work of breathing increases enormously, and a point is soon reached where the work of breathing is a major part of the body's energy expenditure.⁽¹³⁾ It is obvious that in emphysema there must be some point at which any further increase in ventilation is achieved only by so disproportionately increasing metabolic oxygen consumption and carbon dioxide production, simply from the demands of the work of breathing, that there is no net gain in CO_2 elimination. Indeed, there are well defined optima in ventilation beyond which the CO_2 tension may actually begin to rise. Further, within this same range there is a point at which oxygen is no longer available for extremity muscle use because the respiratory muscles are demanding the total supply.

These relationships become clearer when they are expressed diagrammatically.^(14,15) Figure 2 indicates the variation in alveolar CO_2 tension as it is determined by total body oxygen consumption (or CO_2 production) and alveolar ventilation. Alveolar ventilation appears as a family of isopleths radiating as straight lines from the origin. The normal alveolar point is at 40 mm Hg CO_2 tension and relative oxygen consumption of 1.0 (i.e. 100% of normal) and relative alveolar ventilation of 1.0. The top of the diagram indicates standard blood CO_2 dissociation curves, it being assumed there is no arterial-alveolar gradient. The straight lines in this portion of the diagram are pH isopleths calculated from the Henderson-Hasselbalch equation. The normal arterial point is at 40 mm Hg CO_2 tension, 25 mM HCO_3 per L and pH of 7.42.

Voluntary hyperventilation in normal man moves the alveolar point rapidly down until the metabolic cost of breathing begins to contribute substantial amounts of CO_2 to the air. There is clearly a wide range over which the cost of breathing is inconsequential. As ventilatory work assumes increasing importance the rate of fall of CO_2 tension in the alveolar air diminishes and a minimal value is achieved. The point can move no farther when it reaches the alveolar ventilation isopleth which is the maximum breathing capacity for that

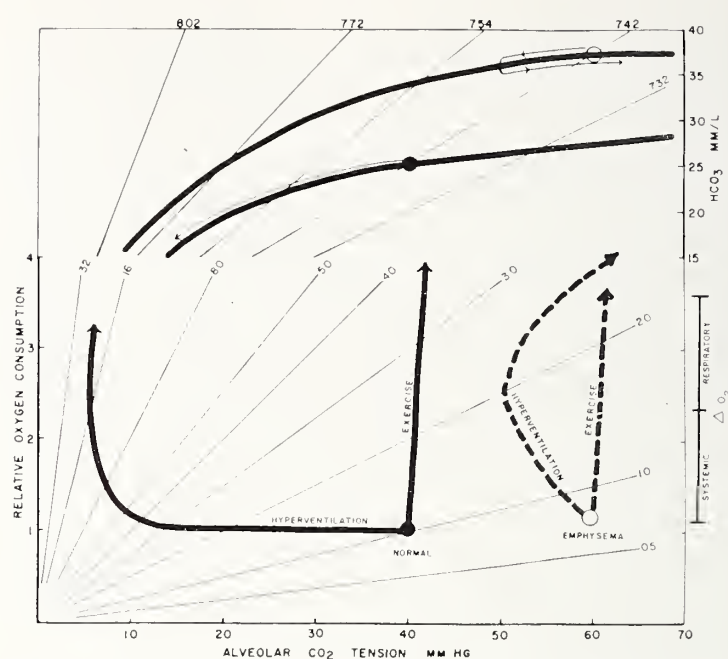


FIG. 2. Diagram to illustrate the quantitative relationships between alveolar carbon dioxide tension and total body oxygen consumption (Respiratory Quotient assumed constant) in health and pulmonary emphysema. Straight lines are alveolar ventilation isopleths. The top of the diagram shows a CO_2 dissociation curve for normal man (lower) with the arterial point and for emphysematous man with compensated respiratory acidosis (upper). See text for explanation of hyperventilation and exercise alveolar pathways.

subject. The muscular exercise pathway is also illustrated to show how, in the face of an increased demand for CO_2 excretion (increase oxygen consumption), the alveolar tension is maintained at an almost constant value. This means that respiratory response in the normal subject almost precisely matches the increased demand initiated by the rise in body metabolism occasioned by muscular exercise.

The alveolar point of an emphysematous subject is illustrated by the open circle. For the sake of example a resting alveolar CO_2 tension of 60 mm Hg has been assumed, thus implying a 33% reduction in alveolar ventilation. The arterial point has been located on a new dissociation curve demonstrating a fully compensated respiratory alkalosis (pH is normal but bicarbonate reserve is increased to balance the higher CO_2 tension). The possible advantage to the patient of maintaining this chronic respiratory acidosis is seen when the pathway of alveolar gas is examined during hyperventilation.

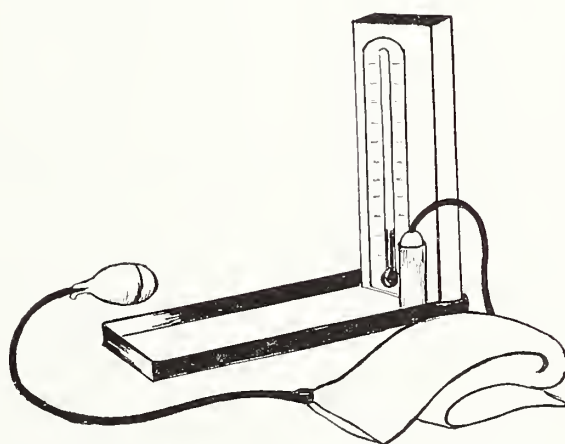
At rest the relative oxygen consumption in pulmonary emphysema is about normal (1.0), and the major fraction of the total is available for systemic utilization (area of utilization is approximately indicated on the right ordinate). If however, such a patient attempts to restore his CO_2 tension to normal by deliberately increasing ventilation, the oxygen consumption required for the increased respiratory effort is of sufficient magnitude to both prevent the degree of fall in CO_2 ten-

sion anticipated and to seriously detract from the oxygen supply available for systemic needs. The net effect is a rather feeble fall in CO_2 tension compared to a large energy expenditure. The minimal CO_2 tension achieved is still above normal because of the rapid rise in metabolic CO_2 production. Beyond this point the maximum breathing capacity is rapidly approached and the CO_2 tension rises progressively along the limiting alveolar ventilation isopleth.

The truly compromise adaptation in pulmonary emphysema is then the sufferance of a chronic respiratory acidosis in order to insure an adequate oxygen supply to the body. The chronic hypoventilation is continuously aggravated through an adaptive readjustment in the control mechanism although the initiating process was a mechanical alteration in the ventilatory apparatus.

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The Control Of Household Poisonings

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The current and comparatively recent wide-spread interest in chemical poisonings stems from a realization that something ought to be done about it and from a recognition that much of practical benefit can be accomplished. I hope that the following comments will direct your attention to the magnitude of this problem, particularly as it is encountered in upper New England, and to indicate some of the ways in which this menace can be and is being combatted. The ultimate success of any program designed to improve the control (i.e., prevention and management) of chemical poisonings depends upon activities at the community level, where the local physician clearly has a major responsibility. At regional, state, and national levels, there are many individuals and organizations devoted to improving these efforts. Some of these people and the organizations they represent are mentioned below. I shall use this occasion to tell you also about a group of us in Hanover who are prepared to furnish the kinds of information you need when you encounter cases of poisoning in your practice.

POISONS AND THEIR VICTIMS

A useful perspective on the subject of accidents in general and poisonings in particular can be gained from Table 1, which summarizes the average number of fatalities each year from 1952 to 1955 in Maine, New Hampshire, and Vermont. Of the total numbers of accidental and violent deaths, relatively few arise from poison, namely about one in fifteen. Except for suicides and homicides, all violent deaths are classified as accidental, about a third of which can be ascribed to motor vehicle traffic accidents. Only when compared with the carnage on the highways does the incidence of fatal accidental poisoning seem unimpressive. Actually the three upper New England states lose almost three dozen citizens each year from preventable acute poisonings (accidental). In addition nearly fifty people choose to take their lives by poison annually. Another two dozen persons die from one readily recognizable form of compulsive self-poisoning, namely alcoholism, both acute and chronic. Chronic dust poisoning in the form of diagnosed cases of occupational pneumoconioses claims more than a dozen lives in this area. Clearly the annual toll from toxic chemicals warrants attention.

Are we really living in a dangerous part of the country? Not according to Table 2, where the mortal-

ity rates (per 100,000 population) for Maine, New Hampshire, and Vermont are compared with the national averages during the years 1952 to 1955. More recent statistics have not yet been released by the U. S. Public Health Service, but because the mortality rates from violence show no obvious trend over this four year period, we can safely assume that the rates are approximately the same today. Most of the rates in upper New England match the national averages. A few of our rates appear to differ significantly from those in the rest of the United States. Thus the incidence of reported suicides seems to be unduly high throughout this area, including suicides by poison, which account for about one third of the cases of self-inflicted death. With respect to accidental poisonings from solids and liquids, Vermont was unaccountably below the national average during each of these four years. Accidental poisonings from gases and vapors took a highly variable number of lives each year, but in Maine the rate was consistently above the national average, and Vermont's record was rather spotty in this regard. A disproportionately large number of deaths from alcoholism (acute and chronic) was also reported in Maine.

Only a well-trained epidemiologist or public health officer could comment authoritatively about these mortality rates. I can only suspect that the comparatively high incidence of suicide has something to do with the age distribution of our population (the rate is known to be highest in the aged). Perhaps the incidence of death from toxic gases and vapors tends to be higher in all northern states than in the nation as a whole, because homes, garages, and cars are often kept closed during the cold winter season, thereby increasing the hazard from carbon monoxide that arises in stoves, furnaces, and internal combustion engines. That the negro population of northern New England is comparatively low does not appear to account for rate differences in Table 2. Throughout the nation the mortality rate from accidental poisoning is higher in the negro population than in the white race, but the incidence of suicide, including suicide by poison, is distinctly lower. As a result poison kills comparatively more white people than negroes, and yet the differences are probably not sufficiently large to be relevant to the data in Tables 1 and 2. In this region as elsewhere in the nation, females are more successful than males in escaping violent death. In Table 1, males were the victims in 70 per cent of all lethal accidents, 72 per cent of fatal accidental poisonings, and 67 per cent of successful suicides by poison.

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TABLE 1*
AVERAGE ANNUAL TOLL OF LIVES
(1952, 1953, 1954, 1955)

	Maine	New Hampshire	Vermont
Accidents, poisonings, violence	657	357	279
Accidents (all types)	524	287	219
Accidental poisoning by solid and liquid substances	7	6	2
Accidental poisoning by gases and vapors	13	3	5
Alcoholism, acute and chronic	18	6	4
Suicides (all types)	121	70	57
Suicides by poison	22	16	9
All acute poisonings†	51	28	18

*Data taken from the Vital Statistics of the United States, National Office of Vital Statistics, U. S. Public Health Service.

†Includes accidental and suicidal poisonings and arbitrarily half of the deaths from alcoholism. Excludes anesthetic deaths and other therapeutic misadventures.

TABLE 2*
AVERAGE ANNUAL MORTALITY RATES
(1952, 1953, 1954, 1955)

Deaths per 100,000 population in	U.S.A.	Maine	New Hampshire	Vermont
Accidents, poisonings, violence	74	73	67	74
Accidents (all types)	59	58	54	58
Accidental poisoning by solid and liquid substances	0.8	0.8	1.0	0.5
Accidental poisoning by gases and vapors	0.8	1.4	0.6	1.2
Alcoholism, acute and chronic	1.4	2.0	1.2	1.2
Suicides (all types)	10	14	13	15
Suicides by poison	2.1	2.4	3.0	2.6
All acute poisonings†	4.4	5.7	5.2	4.9

*Data taken from the Vital Statistics of the United States, National Office of Vital Statistics, U. S. Public Health Service.

†Includes accidental and suicidal poisonings and arbitrarily half of the deaths from alcoholism. Excludes anesthetic deaths and other therapeutic misadventures.

Dr. Katherine Bain (1954) has analyzed mortality rates from accidental poisoning in pre-school children (under five years) for the years 1949 and 1950. The national average proved to be 2.6 deaths per one hundred thousand population within this age range. When the states were listed in rank beginning with those having the highest incidence, Vermont stood eleventh,

Maine thirty-fourth, and New Hampshire thirty-eighth. As noted by Dr. Bain, however, deaths in small states over the two-year period were so few as to render these ratings unreliable. For example, according to Table 2 Vermont's record in the years 1952 to 1955 was considerably better than the national average for the category that includes most childhood poisonings (namely

"accidental poisoning by solid and liquid substances"). Whether or not northern New England rates significantly ahead of the rest of the nation in deaths by poison, it is reasonably certain that the record is not one of which to be proud.

It should be apparent that data like those in Tables 1 and 2 tell only part of the story. First the true rates are undoubtedly higher than those reflected by the available statistics, because even today some cases of poisoning undoubtedly are misdiagnosed and so misclassified. Probably more fatal poisonings escape recognition than do deaths from drownings, falls, or automobile accidents. Secondly, in analyzing mortality statistics, it is easy to forget that non-fatal accidents are also a menace to society. It has been estimated that there are between one and two hundred poisonings for every fatal one. Many of these cases lead to severe and permanent disability. There is no way of measuring the suffering of parents who discover that their toddler has ingested some non-edible substance around the house, even though the child subsequently develops no untoward symptoms whatever.

The victims of toxic gases and fumes are found in all age ranges, but a disproportionately large number of fatal poisonings from ingestion of liquid substances is found among children below five years of age. For example in the national statistics for 1955, the infant and pre-school child accounted for more than 25 per cent of the deaths in this category. The agents responsible for poisoning in this age group have been outlined by Bain (1954), who found that one-third of the deaths were due to the ingestion of drugs and about one-quarter due to the ingestion of petroleum products (kerosene and gasoline). At least half of the residual cases were ascribed to lead, arsenic, lye, and other corrosives such as bleach. Among drugs aspirin and other salicylates were and probably still are the major offenders in young children. In adults the barbiturates are the class of drugs responsible for the highest incidence of acute fatal poisoning.

Although the majority of intoxications are due to the familiar poisons listed above, a substantial number and perhaps increasing proportion of serious poisonings stem from new synthetic substances that are found in the bewildering array of consumer products produced by modern industry. Press (1957) and others have emphasized how our modern environment is becoming filled with new and often unrecognized poisons. Technological advances even since World War II are reflected in almost all kinds of consumer products. One of the most dramatic examples is afforded by modern agricultural chemicals (pesticides, insecticides, rodenticides, herbicides, fungicides, insect repellents, etc.). The large number of new and unfamiliar substances in our homes and on our farms makes it increasingly difficult for the physician to keep informed about household poisons. Even most reference books on toxicology are hopelessly out of date. Some of the ways in which

physicians can acquire the information they need are summarized below.

In spite of the large variety and increasing quantities of toxic chemicals to which the public has access, there is no conclusive evidence that the incidence of accidental poisoning is rising. Indeed over the past one or two generations it is probable that the mortality rate has fallen (Press, 1957; Conley, 1957). That the older poisons such as lye and lead are causing fewer fatalities today than a generation ago is a measure of the success of past and current efforts at prevention and control. Some of the effective programs of prevention are outlined below.

PROGRAMS OF PREVENTION

Over the past two generations preventive medicine has arisen as a major force in modern society. Many of its dictates have been implemented by legislative action, reflecting a growing public interest and awareness in matters of health. Industry has voluntarily assumed an increasing responsibility for the health of its employees and indirectly for the well-being of its customers. Undoubtedly this broadening social conscience has served among other things to hold down what might otherwise have been a terrifying rise in the incidence of chemical poisonings.

Many individuals and organizations have helped to translate the principles of preventive medicine into the field of toxicology. For over fifty years the Federal Food and Drug Administration has been prominent in this campaign; the people and forces that led to this monumental legislation in 1906 have been reviewed recently (Anonymous, 1956). For over fifty years this act has protected the public from impure, misbranded, and adulterated foods and drugs. In 1938 the law was extended to cosmetics and in 1941 was amended to require certification of insulin. Other legislative highlights include the Federal Caustic Poisons Act of 1927 and the Harrison Narcotic Act of 1914. The Federal Insecticide, Fungicide, and Rodenticide Act of 1947 authorizes the Department of Agriculture to require adequate toxicological information and labeling of new pesticides before they may be sold. Paralleling these federal measures, states, counties, and many municipalities have evolved laws to control the standard of purity of foods and drugs and their manufacture, sale, and dispensing, as well as rigorous sanitary codes. Undoubtedly protective legislation will be extended in the future. For example the Committee on Toxicology of the American Medical Association is currently working on a uniform chemical label law to cover "household chemicals." This draft is intended to set a pattern for any legislative regulations that may eventually require precautionary labeling for the identification of hazardous ingredients in products that are not covered by current laws.

Behind these legislative successes (and some failures) have been many professional and lay organizations. For

example the American Medical Association has long exerted leadership, particularly through such standing committees as its Council on Drugs (formally Council on Pharmacy and Chemistry), Committee on Toxicology, and Committee on Pesticides. Two non-governmental agencies whose publications since 1906 have been recognized by Congress as official are the United States Pharmacopeial Convention (founded in 1820) and the Committee on the National Formulary (since 1886) of the American Pharmaceutical Association. Many activities of the U. S. Public Health Service and some functions of the U. S. Department of Agriculture are concerned with various phases of poison control. Among the professional groups long active in studying and combatting this problem are the American Public Health Association and the American Academy of Pediatrics. The National Safety Council and the American Red Cross have promoted public interest in and knowledge about chemical poisons. Various industrial groups have sponsored toxicological research and have helped to disseminate information about toxic hazards (for example the National Agricultural Chemicals Association, the Lead Industries Association, and the Petroleum Institute). For a long time life insurance companies have compiled and published data about all kinds of accidents and have promoted various safety campaigns; Dr. George Wheatley of the Metropolitan Life Insurance Company has been especially active in the area of poison control. As in other fields of interest, lay education has found many effective champions at the community level, including local physicians, health departments, county medical societies, parent-teachers associations, women's clubs, et cetera.

THE DEVELOPMENT OF POISON CONTROL CENTERS

In addition to prevention programs, the problem of accidental poisoning has been attacked by attempts to improve techniques used in the medical management of poisoning. With a few notable exceptions, such as the development of dimercaprol (BAL), research accomplishments in this specific area have not been spectacular, but victims of poisoning have certainly benefited from the development of antibiotics, adrenal cortical hormones, exchange transfusions, and many other modern therapeutic tools.

In this field the acquisition of new knowledge may not be as critical a need as the effective utilization by physicians of information that is already in the files of the professional toxicologist. A lack of adequate communication has become particularly apparent with the development of many new synthetic substances since World War II. A recent reference book by Gleason, Gosselin, and Hodge (1957) is an attempt to summarize for physicians what is known about household poisons, both new and old, and to indicate the chemical composition of some of the thousands of trade name products on the consumer market.

The development of poison control centers and

poison information centers represents one very effective way by which modern toxicological knowledge can be focused on the clinical problems of managing victims of poisoning. These centers maintain not only well organized treatment centers but also facilities for providing physicians with prompt and reliable information about poisons on an emergency basis. The first city-wide and integrated poison control center was established in Chicago in the fall of 1953 under the auspices of the five Chicago medical schools, the Chicago Board of Health, the State Toxicological Laboratories, and other allied groups. This important achievement was under the original direction of Dr. Edward Press, who as the current field director of the American Public Health Association has served as a foster father for many of the sixty to seventy poison centers that are now operating throughout the United States.

While all existing poison centers are designed to share a centralized store of information about the treatment and prevention of poisonings, centers differ markedly from one another in terms of their internal organization. In New York City the center is operated as a service of the City Health Department, and is under the direction of Dr. Harold Jacobziner. Fifteen centers scattered throughout the state of Florida operate under the leadership of Dr. Robert Grayson and under the sponsorship of the American Academy of Pediatrics and the Florida Pediatrics Society. (Both the New York City and Florida organizations and activities were described in June 1957 by exhibits at the AMA meeting in New York City). Poison centers in Massachusetts, California, Florida, Oklahoma, and up-state New York are known to be affiliated in one way or other with their respective state health departments. In Connecticut funds have been appropriated by the legislature specifically to establish and maintain several poison centers. As in New York City the Denver and Philadelphia groups are affiliated with their respective municipal health departments. Many of the centers throughout the country, however, have no governmental affiliations but were organized as a public service by members of a general hospital, medical school, or local medical society.

In the three states of northern New England, no formally organized centers are known to be in current operation, according to a survey this summer by Dr. Robert Price from the Regional Office of the United States Public Health Service in New York City (personal communication from Dr. Fred W. Morse). On the other hand several individuals and groups in upper New England are known to be interested in the subject of poison control. Besides our group here at Hanover, I know that Dr. R. J. McKay Jr. of the University of Vermont College of Medicine at Burlington has a sustained interest in this subject, and I have recently learned that the same is true of Dr. Marguerite Dunham, District Health Office of Presque Isle (Maine). Although there are probably many physicians residing

in northern New England who are qualified to act as consultants in matters of clinical toxicology, it is my impression that most practitioners with toxicological problems in this region have utilized the services of the Boston Poison Information Center, originally organized by Dr. Lendon Snedeker and currently under the direction of Dr. R. J. Haggerty, the Executive Secretary.

To help states and local communities establish new poison control centers, to coordinate the activities of existing centers, to stimulate the development of new and improved methods of prevention and treatment, and to study national and area trends in poisoning, a national clearing house for poison control information was established in the spring of this year by the United States Public Health Service. The clearing house will operate under the general supervision of Dr. James L. Goddard, Chief of the Public Health Service Accident Prevention Program in the Division of Special Health Services. Among its other activities this organization expects to disseminate information designed for the education of professional and lay groups on the subject of poisons and poisonings.

POISON INFORMATION CENTER AT HANOVER, NEW HAMPSHIRE

In the spring of this year a committee was established to organize a poison information center in Hanover. This committee consists of a pharmacologist (R. Gosselin) and five physicians on the staff of the Hitchcock Hospital, namely two pediatricians, Colin C. Stewart Jr. and Robert C. Storrs; two internists, Louis B. Matthews and F. Corbin Moister; and an anesthesiologist Lewis H. Lambert. Our initial efforts are being sponsored jointly by the Dartmouth Medical School, the Hitchcock Hospital, and the Hitchcock Clinic. At the moment we have no affiliations with groups outside of Hanover, but we have received sympathetic encouragement from the Tri-State Regional Medical Needs Board. Although the organizational details of our center may change, no prominent changes are expected in our operating procedures or in the type of information which we intend to provide. As soon as a few administrative problems are resolved, our formal activities will begin. Presumably we will be in full operation by the time that this report is published. The following comments are intended to describe the nature of the services that we propose to provide and to indicate how these functions can be of benefit to practicing physicians in upper New England.

We shall maintain the emergency room at the Mary Hitchcock Memorial Hospital suitably equipped for the treatment of such acute poisonings as may be sent here, but since we operate from a rural center, we expect that most of our contacts will consist of telephone consultations with interested physicians. We hope that our organization will also serve as a vehicle in this area for public education on the subject of accidental poisoning. Our activities will almost cer-

tainly help to promote the training of resident physicians at the Mary Hitchcock Memorial Hospital and the Veterans Hospital at White River Junction in the general field of clinical toxicology. It seems probable that ultimately we can furnish epidemiological data on chemical poisonings to municipal and state health departments of this area, as well as to the U. S. Public Health Service.

In consulting on cases of acute poisoning, each of us will draw on his own clinical experience, as well as on an extensive file of toxicity data that is now being assembled here. As a basis for this information file, we are using the data published in the treatise of Gleason, Gosselin, and Hodge (1957). Among other features this volume provides an index of more than 15,000 trade name products, the name of the manufacturer of each, and in most cases the chemical composition as stated by the manufacturer. To keep this compilation as useful as possible, it will be revised and expanded periodically as new toxicity information accumulates and as new chemical substances reach the consumer market. Currently Mrs. Marion Gleason and Dr. Harold Hodge of Rochester, New York, in collaboration with this writer, are preparing a monthly bulletin that supplements the data already published. For example we are currently collecting data about modern tranquilizing drugs and their acute toxicities in laboratory animals and in clinical patients. This material will be added automatically to the files of the Poison Information Center at Hanover, and of poison centers in upper New York State. Eventually this bulletin will probably be made available to all interested groups.

In most cases when a physician can furnish us with the name of the product ingested by his patient, we hope to be able to provide some statement about the composition of the product, the identity of those ingredients that might be responsible for toxic effects, and perhaps in some instances personal, provisional, and therefore confidential estimates of the lethal dose (Gosselin, 1957). Wherever our toxicological information is adequate, we will try to predict the latency of the toxic reaction, the target organ of damage, the nature of the anatomical or biochemical lesion, and to outline special measures of therapy if any are warranted. However, with the exception of older poisons, for which the clinical syndromes are well established, much of the advice that we can give is admittedly based on inference, some of it on frank conjecture. It is not altogether improbable today for a physician to encounter a victim of some poison for which no human cases have been documented or even reported. It is generally conceded that every physician has a moral obligation to study these cases as diligently as possible and to publish his findings so that others may benefit by these rare experiences.

It may be helpful to outline the areas in which we believe that we can make *no* significant contribution. We have no magical advice to give to the patient. Any

layman who phones us will receive simple instructions in first aid, with the admonition to consult his local physician as promptly as possible. It seems completely unwise and inappropriate for any physician to recommend that a patient or his family telephones us directly. In other words our consultation service is designed for physicians and not for their patients. We regret that we are currently unable to provide chemical or toxicological assays on potentially toxic materials; a limited service of this type may eventually evolve. We readily admit certain areas in which our information and experience seem particularly deficient, notably the subjects of toxic plants and animal venoms, low-grade chronic poisonings, allergic reactions, side-effects from normal therapeutic doses, industrial exposures, and radiation hazards. There are undoubtedly many specific brands of products that have a restricted geographical distribution and with which we have not yet become acquainted. In all of these matters we are anxious to learn.

In summary we invite you to consult us whenever you are puzzled by a case of acute chemical poisoning.

It costs only the price of a telephone call. Although there will be occasions when we cannot be of help, it is probable that we will be able to refer you then to some one with special knowledge and experience. We can be reached through the telephone switchboard of the Mary Hitchcock Memorial Hospital (Hanover 800). Ask for the Poison Information Center and you will be connected at any hour of day or night with one of the professional members of our panel.

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Allergic Drug Reactions^{1, 2}

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Untoward reactions to drugs are of three main types, toxic, idiosyncratic, and allergic. If, for example, a patient ingests several grams of phenobarbital, coma will develop and death may result. This reaction will occur in most individuals if this quantity of the drug is taken. It is an example of toxicity and represents an exaggeration of the usual pharmacologic action of the drug due to overdosage. If, on the other hand, a patient develops marked mental depression on the usual dosage of phenobarbital, it is classified as an idiosyncratic reaction and represents an exaggerated response to small or usual dosages of a drug. It is still consistent with the pharmacologic action of phenobarbital. If, however, the patient develops a measles-

like rash when phenobarbital is ingested, it is an allergic reaction and is a manifestation of sensitivity unrelated to any conceivable pharmacologic action of the drug.

Although the exact mechanism of many allergic drug reactions is unknown, it is almost by definition based on a specific antigen-antibody reaction. Most drugs being non-proteins or haptens are antigenic because of their ability to combine with body proteins. It is the antigen-antibody reaction which produces the clinical manifestations of drug allergy. It is the hapten which determines the specificity of this reaction. In most cases these haptens, by themselves, are unable to combine with antibodies. Therefore, intradermal testing with the offending drug usually fails to produce a positive reaction.

On the whole, the evaluation of a drug allergy is a clinical problem. Diagnosis is based on several factors. A high index of suspicion is, of course, of paramount importance since drug eruptions mimic almost any skin disease. In general, drug eruptions appear suddenly and have a widespread distribution on the body. They are usually unaccompanied by systemic signs. There must be a careful history of all topical and internal medications, as well as any previous drug eruptions.

Although the character of the eruption is often distinctive for certain drugs, this problem is complicated

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by the fact that many chemically unrelated compounds may produce identical allergic reactions. On the other hand, a single drug may produce various reactions. Sulfathiazole, for example, may produce contact dermatitis, urticaria, toxic erythema, erythema multiforme, erythema nodosum, exfoliative dermatitis or fixed eruptions. This includes almost all manifestations of drug allergy occurring on the skin.

It is also important to bear in mind that many commonly used drugs although varying in their pharmacological action may cross-react because of a common antigenic structure. For example, the so-called "benzamine nucleus" is common to sulfonamides, certain "caines," including cocaine, benzocaine, and Procaine® and paraphenylene diamine, which is the basic ingredient in many commonly used aniline dyes. The following case illustrates the clinical importance of these cross reactions.

Mrs. C. R., a 65-year-old woman with chronic eczema of her hands, was treated with a sulfonamide ointment in 1945. Within a few weeks she developed a contact dermatitis on her hands due to the sulfonamide ointment. In 1948 because of an upper respiratory infection she was given a sulfonamide preparation orally. Within a few days there was a flare-up of the hand eczema. In 1950 she developed a contact dermatitis which was due to a dye present in her stockings. This was treated with an ointment containing benzocaine which produced a super-imposed contact dermatitis.

The following observations are based on a critical review of allergic drug reactions seen at the Hitchcock Hospital, Hanover, New Hampshire, in recent years.

The most commonly encountered manifestation of drug allergy is *contact dermatitis* to locally applied treatment. Here the epidermis is sensitized and this produces the clinical picture of eczema. It is characterized by erythema, edema, blistering, and weeping. Skin testing is of great value in these cases since a patch test of the suspected material will frequently produce an eczematous response at the test site often associated with an exacerbation of the original dermatitis. Of 131 proven cases of contact dermatitis, 79 or 60% were due to drugs which should never be used topically. These include ointments containing "caines," especially benzocaine, antihistamines, sulfonamides, penicillin, and Furacin.® It is difficult to conceive of a medical situation in which use of these drugs is necessary. Medications of equal therapeutic value with far less danger of sensitization are readily available.

Urticaria is the result of transient mild injury to the superficial blood vessels. This produces increased permeability of the vessels with extravasation of fluid and leucocytes. Urticaria and the associated conditions of serum sickness and angioneurotic edema were the second most frequently observed manifestations of drug allergy in our series. Seventy-two per cent of these were due to penicillin. Angioneurotic edema as the sole manifestation of drug allergy is unusual. In only two

instances, one from penicillin and one from potassium iodide, was this the only observable cutaneous reaction. Although repeated use of drugs may produce acute intermittent urticaria, true chronic urticaria resulting from drug allergy is rare.

Toxic erythema mimics scarlet fever or measles. Forty-two cases of toxic erythema due to drugs were observed. The barbiturates and sulfonamides should be suspected when an eruption of this type occurs since they accounted for a majority of the cases. In this series, however, several examples of toxic erythema due to diadrast, penicillin, quinidine, and streptomycin were observed as well as solitary reactions to various other medications.

Erythema multiforme is an acute inflammatory disease characterized by the symmetrical distribution of a variety of primary lesions, ranging from urticarial wheals to blisters. It is the result of more severe damage to the blood vessels than in urticaria or toxic erythema. The lesions are most commonly distributed over the trunk, extremities, hands and feet, and mucous membranes. There are many etiologic agents responsible for erythema multiforme. Thirteen instances were observed which were due to drug allergy. One case followed the use of a proprietary ointment in the treatment of a burn. The remaining cases were all due to internal medication. Penicillin and sulfadiazine were the only drugs responsible for more than a single case.

Eczematous dermatitis can also occur from drugs taken internally. In probably all instances the skin has been previously sensitized by contact with the allergen. Of special interest in this group are the cases due to poison ivy extract which is administered during an acute episode of poison ivy dermatitis. In other words, it is being given to individuals who already demonstrate sensitivity to poison ivy antigen. It is beyond all bounds of reason to explain the rationale for this treatment. It is as dangerous and as illogical as treating serum sickness due to penicillin with more penicillin. We have observed instances of dermatitis following use of this extract which have persisted for a year or more, thus converting a usually minor, self-limited disease into a major dermatological problem.

Exfoliative dermatitis, which is characterized by a generalized and persistent scaling and shedding of the epidermis, is a serious problem. Six cases due to drugs were observed during the past five years. All began as a toxic erythema which progressed to a generalized exfoliation. Phenobarbital and arsenic were each responsible for two cases. Bismuth and penicillin produced one each.

The *Fixed Drug Eruption* is an unusual cutaneous reaction. It consists of one or more edematous, erythematous, urticarial plaques which rapidly develop following the injection of the offending agent. Upon healing residual hyperpigmentation remains. If the drug is re-administered, the eruption occurs in the same site; thus the name, Fixed Drug Eruption. The classic etiologic

agent for this eruption is phenolphthalein and all cases seen here during the past five years were due to this drug. Sulfonamides, aspirin, phenacetin, and many others may also produce this type of reaction.

Anaphylaxis is a serious and sometimes fatal type of reaction that appears within 30 seconds to one hour after administration of the drug. It is characterized by pruritus, urticaria, angioneurotic edema, asthma, pulmonary edema, and shock. Three examples of anaphylaxis were observed. Penicillin was responsible for two of these and Piromen® for the other. Because of the seriousness of this reaction a brief review of the usual medications which can produce death by anaphylaxis may be of value. Iodides, bromides, aspirin, local anesthetics, various organ extracts, penicillin, skin testing material such as pollen extracts, sera, and vaccines have all produced fatalities. Before any of these drugs is administered a careful history of previous reactions to these agents should be searched for as well as a history of multiple allergies of any sort. Aspirin anaphylaxis, for example, is usually seen in women with asthma and nasal polyps. In cases of doubt, cautious skin testing may be done; or, better still, their use avoided altogether.

In general, it is not within the scope of this paper to discuss the manifestations of allergy to single drugs. It may be valuable, however, to review briefly the allergic reactions to one drug which is probably responsible for more reactions than any other therapeutic agent, namely, penicillin. Ninety-four instances of penicillin allergy were recorded. This is almost one-third of all cases of drug reactions seen. Penicillin reactions are of six main types. The time elapsed between the administration of the penicillin and the onset of signs and symptoms is the most important criterion in determining the variety of the allergic reaction and its significance.

1. *Anaphylactic reactions* to penicillin occur within an hour after administration of the drug. They occur under two entirely different circumstances. Rarely, anaphylaxis to penicillin is seen in atopic individuals with asthma due to inhalent molds. Since the individual is already sensitized, this reaction can occur on initial exposure to penicillin. Far more commonly, anaphylaxis to penicillin is seen in patients receiving repeated injections of penicillin over a long period of time.

2. Twenty-four to 48 hours after the initial injection of penicillin a patient, usually an adult male, may develop *erythema, papulation, and vesiculation* of the hands, feet, and groin. This is due to the activation of a pre-existing sensitivity induced by previous fungus infection. A penicillin-like antigen is produced by dermatophytes which apparently sensitizes the individual to penicillin. Therefore this reaction may occur on initial exposure to penicillin.

3. *Urticaria* may occur five days to several weeks after exposure to penicillin. This reaction responds dramatically to antihistamines and thus poses no therapeutic problem.

4. *Serum sickness* may occur five to 21 days following

the initial injection of penicillin. No previous exposure to the drug is necessary. Following recovery from this reaction re-exposure to penicillin does not always produce an allergic response. Both urticaria and serum sickness may occur less than five days after exposure to penicillin. These are examples of the accelerated reaction. They represent the reaction of re-exposure to an antigen and thus require a shorter incubation period.

5. *Contact dermatitis* due to penicillin does not differ morphologically from those cases due to other etiologic agents. Patch testing with penicillin almost invariably produces an eczematous response.

6. A *miscellaneous group* of responses to penicillin may occur after an incubation period of one week or more. These include such conditions as erythema multiforme, erythema nodosum, pityriasis rosea-like "id," toxic erythema, and exfoliative dermatitis.

It has been stated that penicillin O produces fewer allergic reactions than penicillin G. In general this is not true. When there is persistent allergy to penicillin G, cross reaction with penicillin O will usually occur. Cases have been observed in which patients who had previously reacted to penicillin G tolerate penicillin O on a later occasion. This is not evidence for the decreased allergenicity of penicillin O and can be explained by the usual transitory nature of the delayed allergic reaction. Penicillin G would be tolerated equally well in most instances by patients who have already experienced a serum sickness type of response from penicillin G. In other words, the development of serum sickness in response to penicillin in a given patient does not entirely preclude its future use in that patient. However, for general purposes it may be said that the more violent and rapid the penicillin reaction the less likely that any type of penicillin may be safely administered at a future time.

Two facts become apparent from this survey of allergic drug reactions seen in this hospital. One is the decided difference between the drugs producing contact dermatitis and the drugs producing all other varieties of reactions. The drugs in the latter category are established, useful, and at times lifesaving medications including the sulfonamides, barbiturates, and penicillin. This is in sharp contrast to the offending agents in the majority of cases of contact dermatitis. Drugs such as benzocaine and the antihistamine ointments are certainly unnecessary in the treatment of self-limited skin diseases since non-sensitizing substitutes of equal or perhaps superior efficacy are readily available. It is in the province of contact dermatitis, therefore, where the greatest opportunities for decreasing the incidence of drug allergy lie. However, an awareness of cross sensitivity and a carefully taken drug history will do much to diminish the incidence of the other varieties as well.

SUMMARY

Over three hundred cases of allergic reaction to drugs seen at the Hitchcock Hospital in the last five years have

been reviewed and discussed. Mention has been made of the mechanism and morphologic form of these reactions. Special emphasis has been placed on reactions

to unnecessary drugs commonly used for topical medication. Penicillin allergy and anaphylax have been discussed in some detail.

Anemia Due To Chronic Gastrointestinal Blood Loss*

FRANKLIN G. EBAUGH, JR., M.D.**

INTRODUCTION

Chronic blood loss anemia (iron deficiency) is the most common type of anemia encountered by the medical practitioner. This paper is intended to discuss only chronic gastrointestinal blood loss anemia and not other forms of iron deficiency anemia such as that occurring from multiple pregnancies, excessive menstrual loss, or in rapidly growing infants.

ETIOLOGY

In order to appreciate the genesis of chronic gastrointestinal blood loss anemia, a brief discussion of normal iron metabolism is in order. Humans are endowed with a remarkably small margin of safety with respect to maintaining adequate iron stores in the presence of chronic blood loss. The Achilles heel, with respect to maintaining adequate iron stores, is the inability of the gut to absorb efficiently dietary iron even in the face of great need. The diet of the average American contains approximately 10 to 15 mg. of iron. Of this, approximately 10% is absorbed daily. In a normal state this amount of iron is more than adequate to cover the daily loss of about a milligram to a milligram and a half of iron in the male but only barely adequate in the case of a female. The greater susceptibility of females to iron deficiency anemia can be explained by the additional stress of a monthly menstrual loss of from 30 to 70 cc. of blood, thus imposing an additional need for some 15 to 35 mg. of iron a month. Pregnancy also imposes an additional need for iron in that 700 to 750 mg. of iron are lost with each delivery.

About half the body iron is contained in the circulating erythrocytes and bone marrow (erythron in figure 1a). All but a small fraction of the remainder

is present in the tissues (tissue iron, figure 1a). The major portion of the tissue iron is in the form of ferritin and hemosiderin (storage iron) and a smaller fraction of this tissue iron is present in the respiratory enzymes and myoglobin. A very small but significant fraction of body iron is present principally in the circulating plasma (4 mg. — figure 1a). About a milligram of iron is absorbed daily as ferrous iron from the gut and transferred to the plasma protein beta globulin known as transferrin, or iron binding protein. The level of the plasma iron varies normally from 90 to 190 micrograms per cent. Radioactive Fe^{59} studies have demonstrated that the plasma iron is in a state of rapid exchange with the bone marrow iron, so that the plasma iron is completely replaced ten times during a 24-hour period. Iron is split off from the hemoglobin of destroyed red cells by the reticulo-endothelial tissue and returned to the rapidly exchanging plasma iron pool for reutilization by the bone marrow. About 80% of the plasma iron ultimately is utilized for hemoglobin metabolism.¹ Approximately a milligram of iron is excreted per day.

One milliliter of packed erythrocytes contains approximately 1 mg. of iron; therefore, for each cc. of blood shed in the non-anemic male or female approximately one-half a milligram of iron is lost. The exact amount of blood loss which can be sustained without depletion of iron stores and the subsequent development of iron deficiency anemia in a normal human on an average diet is not known. However, experience in this laboratory has indicated that an average daily loss of 20 to 30 cc. of blood (10 to 15 mg. of iron) per day will almost certainly, if long continued, result in iron deficiency anemia. As iron deficiency develops, the hemoglobin content of the circulating blood drops so that less and less iron is lost for each ml of blood shed from the body. Usually a state of approximate equilibrium results if the rate of blood loss is not too great, where for many months or even years an individual can maintain a fairly steady hemoglobin of say six or seven grams in the face of chronic blood loss due to the fact

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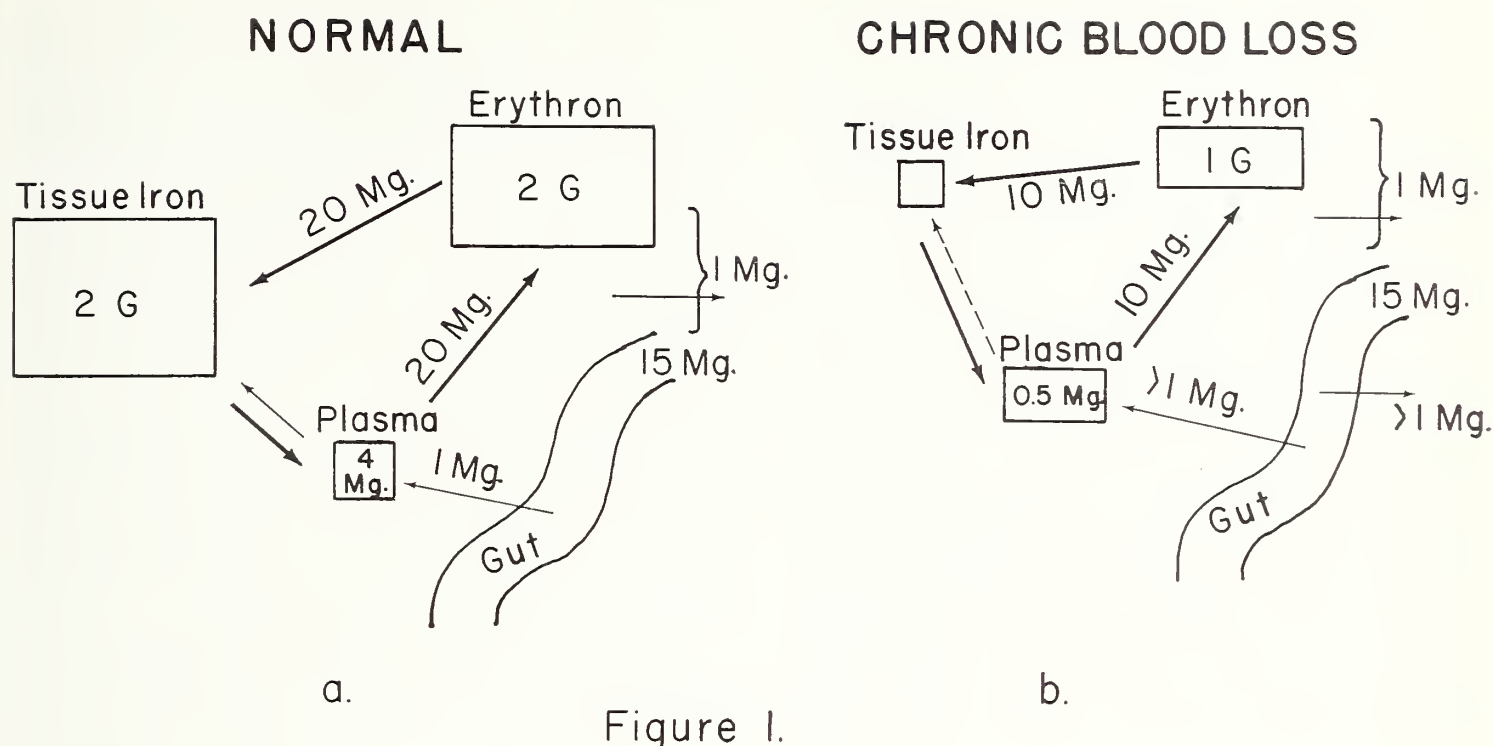


Figure 1.

that he is able to absorb enough dietary iron to make up for the iron in the blood lost which now contains approximately a quarter of a milligram of iron due to its lower hemoglobin content. Chronic blood loss results in a virtual depletion of tissue iron stores and a decrease in the plasma iron (figure 1b). The red cells of a patient with iron deficiency anemia contain less than 30 gms.% of hemoglobin instead of the normal hemoglobin concentration of 33 gms.%.

It is very unlikely that in this country iron deficiency anemia in other than the rapidly growing infants can occur due to poor dietary intake or malabsorption of iron. It is reasonable to assume that poor diet or malabsorption such as in cases of sprue can contribute to iron deficiency, but there is no convincing data to exclude the very likely possibility that concomitant blood loss has occurred in such cases. Achlorhydria is not a cause of iron deficiency anemia since cases of pernicious anemia are no more susceptible to iron deficiency anemia than the normal individual.

HISTORY

In the majority of the patients with chronic blood loss anemia, historical findings of tarry stools, bloody stools, multiple pregnancies, and excessive menstrual blood loss lead to the diagnosis of chronic blood loss anemia. A significant number of patients, however, will have none of these classic findings. It is well known that patients can lose as much as three or four hundred cc. of blood from the upper gastrointestinal tract without having tarry stools. Unnecessary suffering and expense can be caused to the patient if the physician is too easily dissuaded from seriously considering the possibility of chronic blood loss anemia even in the face of a negative history and equivocal laboratory findings. Medications which the patient has

taken previously, particularly those which contain iron, are of importance in obtaining important cues as to the diagnosis. The history of an anemia responsive to iron is of great value in suspecting a diagnosis of chronic blood loss anemia. However, the history of a lack of response to iron should not be accepted as ruling out the possibility of iron deficiency anemia since patients often have an exaggerated idea of the amount of iron they have taken. Large doses of aspirin, taken for long periods of time, may cause considerable blood loss from ensuing gastritis particularly in the elderly patient. The number and timing of transfusions in the past is often of aid in assessing the magnitude of the problem over a given period.

It is very rare for true chronic blood loss anemia to occur from hematuria, since the disease causing the hematuria causes the patient to seek medical aid long before depletion of the body iron stores has occurred. Prolonged nose bleeds can cause iron deficiency anemia but usually lead the patient to the physician long before iron deficiency has developed. Menorrhagia, multiple pregnancies, and rapid growth in infants are very common causes of iron deficiency anemia.

PHYSICAL EXAMINATION

Usually, except for pallor and occasional spooning of the nails, the physical examination is remarkably unrevealing. The spleen is palpable in about a third of the cases. The physical examination may show a variety of findings if the gastrointestinal lesions are far enough advanced to present palpable masses or tenderness to palpation.

LABORATORY FINDINGS

The single most important laboratory finding is the presence of hypochromia of the red cells on the

stained blood smear. The very simplicity and ease with which hypochromia may be found makes it an exceedingly valuable test in leading to the early recognition of chronic blood loss anemia. Thalessemia (Cooley's anemia) also causes hypochromia of the red blood cells and, to a lesser extent, rheumatoid arthritis and chronic infections, but these conditions can readily be distinguished from chronic blood loss anemia on clinical study. The clinician in charge of the patient is understandably discouraged when, as occasionally happens, even the best of the laboratories fail to note the presence of hypochromia of the red cells. The value of the clinician's contacting the laboratory and requesting to see the smear in consultation with its trained personnel cannot be overemphasized. Unless the differential white blood count and platelets are normal on the smear, a blood dyscrasia should be ruled out as the cause of the blood loss. The reticulocyte count is normal in untreated cases of iron deficiency anemia. Computation of the mean corpuscular hemoglobin concentration (MCHC) is a valuable confirmatory finding to the impression gained by examining the blood smear. In order for computation of this red blood cell index to have any meaning, hematocrit determinations must be done either in a Wintrobe tube and subjected to a force of 2000xg for one hour or in the newer more convenient microhematocrit machine† (12,000xg or 16,500 RPM for two and a half minutes). The hemoglobin should be done by the cyanmethemoglobin method†† on a suitable photoelectric colorimeter. The mean corpuscular hemoglobin concentration (MCHC) is equal to the hemoglobin in grams per cent divided by the packed cell volume in milliliters/100 ml of blood and is normally 33 gms.%. Values of below 30 gms.% are consistent with hypochromic anemia. One should, however, not be dissuaded from considering a diagnosis of chronic blood loss anemia even if the mean hemoglobin concentration is slightly above 30 gms.%, since this, like other laboratory tests, is not absolute.

In problem cases of anemia where one cannot be sure of the presence of iron deficiency, examination of the bone marrow aspirate for stainable iron (Perl's stain) is very helpful. The presence of stainable iron

in the bone marrow rules out iron deficiency as the cause of the anemia. The absence of stainable iron does not establish the diagnosis of iron deficiency anemia, but it is the best way to assess iron stores in the patient. Studying the marrow for stainable iron is much more valuable than determining the plasma iron level which can be decreased in other diseases (active rheumatoid arthritis, for example) and is a troublesome technic for the routine laboratory because all glassware must be rendered iron-free by cleaning in concentrated nitric acid.

A third important laboratory aid is the testing for the presence of occult blood in the feces. Commonly either guaiac or the benzidine dihydrochlorine test is used. In our laboratory we add 3 drops of 1 gm.% benzidine dihydrochloride‡‡ to a very thin smear of feces on white bilbous paper followed by 3 drops of 3% hydrogen peroxide. The appearance of a greenish or bluish color within 15 seconds is indicative of increased amounts of occult blood in the stool. The appearance of the blue or green color from 15 to 60 seconds after addition of the benzidine reagent is an equivocal test. The above qualitative test for occult blood in the stool is subject to certain pitfalls in interpretation. The test may be misleading in that only a small sample of the stool is tested. It is unreasonable to assume that the occult blood is evenly distributed through the stool and, therefore, false negative tests may ensue. An even more important difficulty, however, is the fact that chronic alimentary blood losing lesions may bleed intermittently. This is particularly true of the patient who is admitted to the hospital where, free of the stress of his usual environment and on a bland diet, he stops bleeding. The failure to detect occult blood by multiple qualitative tests while the patient is in the hospital cannot be taken as ruling out the presence of a chronic blood losing lesion of the gastrointestinal tract.

Quantitative tests for measuring the amount of blood present in the stool might prove of value in more accurately assessing the magnitude of gastrointestinal bleeding. The use of radioactive sodium chromate has proven to be a highly accurate method for determining milliliters of blood in the 24-hour stools. We have found in employing this test that on the average of 1.4 cc. (0.3 to 2.8 ml.) of blood is shed per day by a normal adult.^{2,3} Roche et al.,⁴ working independently, have reported the same findings. Although this test has proven helpful in selected problem cases in establishing the presence of increased amounts of blood in the stool, it has the major disadvantage of being ex-

†Drumond microhematocrit-clinical model, Drumond Co., Philadelphia, Pa.

††0.2 ml. of whole blood is placed in 5 ml. of Drabkin's solution and compared in a photoelectric colorimeter at 540 mμ to a suitable standard. Drabkin's solution consists of NaHCO₃ 1.0 grams, KCN 50 mg., K₃Fe₆(CN)₆ 200 mg. dissolved in enough distilled water to make a liter. Although cyanide is present in Drabkin's solution, the lethal dose is 4 liters, so that the accidental ingestion of a few milliliters during pipetting is harmless. Standards containing about 60 mg. of hemoglobin per 100 ml. can be obtained from Scientific Products Corporation Company, New York, N. Y. The principal advantage of this technic for measuring hemoglobin is the stability of cyamethemoglobin for many months.

‡‡One gram of benzidine dihydrochloride dissolved in 20 ml. of glacial acetic acid, 30 ml. of water, and 50 ml. of 95% ethyl alcohol in the order mentioned. This reagent should be stored in a dark glass bottle at 5°C. and is stable for one month. The 3% H₂O₂ should be replaced each week (1 ml. of 29% hydrogen peroxide plus 9 ml. of distilled water).

pensive and requiring specialized equipment and training. Because of these disadvantages, we recently have been working to perfect a chemical test for quantitating the amount of hemoglobin in milligrams per 24 hours in the stool. This test has not been subjected to clinical trial.

The most widely used tests for localizing and detecting a bleeding lesion of the gut are, of course, X-ray and endoscopic studies. In cases where these studies lead to a localization of a lesion, the correct management of the patient then is made possible. However, a significant number of patients who have subsequently been proven to have active gastrointestinal bleeding lesions have entirely negative X-ray and endoscopic studies. In such problem cases the passage of a Cantor or Miller-Abbott tube into the alimentary tract has proven of value. The tube is allowed to progress through the alimentary tract and samples are taken every hour for the qualitative benzidine test. The position of the tube can be approximated by taking serial flat plates of the abdomen. It is not possible, of course, to ascertain the position of the tube by simply noting the number of feet passed since the intestine may telescope on the tube to a considerable degree. Six patients have had their lesions successfully localized by this means: Two with shallow ulcerative lesions at the site of a previous anastomosis in the region of the ileum, a leiomyoma, a carcinoma of the cecum, a hiatus hernia, and a duodenal ulcer, all of whom had negative X-ray (except for the hiatus hernia) and endoscopic findings.

MANAGEMENT OF CHRONIC BLOOD LOSS ANEMIA

In cases in which the source of blood loss has been established and localized, the subsequent management by medical or surgical means is well recognized and requires no discussion. Cases in which evidence of chronic gastrointestinal blood loss has been obtained by one means or another but in which it is impossible to ascertain the level of gastrointestinal bleeding present different problems in management. Although it is true that the final proof of iron deficiency anemia is cure of the anemia by iron therapy, more harm than good has resulted from simply giving the patient oral iron and considering the problem solved. Tragic results may result from the false sense of security obtained by the response of the anemia if the cause of bleeding was a malignant lesion. Chronic gastrointestinal blood loss anemia due to a malignant ulceration of the gastrointestinal tract may temporarily respond to iron therapy. In the case of the untreated female with a history of metrorrhagia or frequent pregnancies, it is reasonable to give iron therapy and see the patient six weeks later. If at this time the anemia has disappeared and the stools remain negative for blood, it is reasonable to assume that the iron deficiency state resulted from loss of iron by excessive metrorrhagia or multiple pregnancies, as the case may be. Such patients should be

seen at six months' intervals for a year or two and placed on iron therapy consisting of two to three hundred milligrams of ferrous sulphate after each meal for six months to a year. Cases of males with hypochromic anemia in which no adequate cause for the iron deficient state can be ascertained require different handling. In this instance, if the hypochromic anemia is not severe, say not below 9 grams, iron therapy should not be given. Instead the patient should be seen at frequent intervals, his stools checked for occult blood over weeks or months, and all X-ray studies including a small bowel series and endoscopic studies repeated three to four months after the first series of studies. Males with a severe iron deficiency anemia that is incompatible with existence outside the hospital probably should not be given iron therapy either, but should be subjected to persistent studies until the cause is finally learned. Blood transfusions have no role in the management of iron deficiency anemia other than in patients with angina or dyspnea on bed rest or during diagnostic X-ray studies. Owing to the slowness with which the anemia develops, some patients with no complicating disease tolerate remarkably low levels of hemoglobin (5 gms. %).

When oral iron therapy is indicated, ferrous sulphate is the drug of choice to be given in doses of 300 mg. after each meal. Gastrointestinal upsets will be minimized by careful adjustment of the dose for each patient. The initial dose should be one pill after the largest meal of the day for 4 or 5 days, then two pills a day for 4 or 5 days, then one pill after each meal.

Claims made that other iron salts are better tolerated are misleading since a mg. of these other agents contains less elemental iron. The same results can be obtained by reducing the dosage of ferrous sulphate to contain the same amount of elemental iron. To be especially condemned are medications which contain multivitamins in concentration with iron, particularly folic acid. Aside from being potentially dangerous if they contain folic acid and the patient happens to have pernicious anemia, they result in unnecessary expense to the patient since the addition of these vitamins is unnecessary. The addition of ascorbic acid to iron pills, although theoretically sound (to keep the iron reduced), is of no consequence since the small percentage of improvement in iron absorption is not of practical significance.

A safe and practical iron dextran parenteral intramuscular iron therapy is now available.*** Parenteral iron is, however, not indicated in patients where oral iron can be tolerated. In those patients who have been given a fair trial of oral iron and who cannot tolerate it by reason of severe gastrointestinal symptoms, parenteral iron is of value. The usual total dose is from a gram to 2 grams in 5 to 10 divided doses. Parenteral iron also is of value in certain pediatric cases where

***Imferon — Lakeside Laboratories, Cleveland, O.

the physician cannot be sure that the infant will be given adequate amounts of iron orally. Intravenous iron saccharide preparations should not be used because of the high instance of side reactions and occasional fatal reactions which follow their use. Only patients with proven iron deficiency anemia should be given parenteral iron therapy since the human has no means for excreting iron other than by the shedding of blood or childbirth. Excessive amounts of tissue iron may result in the ultimately fatal disease hemochromatosis. Even oral iron therapy in anemias other than iron deficiency, particularly hemolytic, can result in hemosiderosis and hemochromatosis.

SUMMARY

1. Iron deficiency anemia in the adult in this country rarely if ever occurs except from chronic blood loss or multiple pregnancies. Iron deficiency in the adult due to poor dietary iron intake or malabsorption by the gut alone rarely if ever has been well documented in this country.

2. A physician should not be dissuaded from considering the possibility of chronic blood loss as the cause of anemia in a patient who does not give a history of bloody or tarry stools and for whom tests for occult blood in the feces are negative. Patients with chronic gastrointestinal blood loss often bleed intermittently and may have intervals where the occult blood tests of the feces are negative.

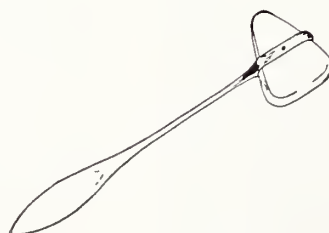
3. The single most important laboratory diagnostic aid in leading physicians to suspect chronic blood loss anemia is the presence of hypochromasia of the red cells on the blood smear. Staining of the bone marrow

for iron, radioactive and chemical quantitative tests for milligrams or ml. of blood excreted per day in the stools are helpful in difficult cases. The use of the Cantor or Miller-Abbott tube may prove helpful in localizing the site of blood loss in the alimentary tract in cases with negative X-ray and endoscopic findings.

4. When oral iron therapy is indicated, ferrous sulphate is the drug of choice given after meals. Various other iron salt radicals are no less toxic than ferrous sulphate when the dosage is adjusted to contain the same amount of elemental iron. The addition of folic acid can be dangerous and is certainly unnecessary, as is the addition of any other vitamin, their only function being to impose unnecessary expense upon the patient. Intramuscular iron dextran is the drug of choice when parenteral iron is indicated.

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The Place Of The Cobalt Unit In Cancer Therapy

FRANK W. LANE, M.D.*

In recent years rapid advances in the field of cancer therapy have made it difficult for general practitioner and specialist alike to keep reasonably abreast of developments. Claims and counterclaims for new methods of treatment have followed one on the other until the problem of proper evaluation has become a major one. Yet, such an evaluation is important indeed, especially so to the general practitioner who is faced daily with the responsibility of referring cancer patients to larger institutions for treatment and who must himself have a fairly accurate knowledge of the usefulness and limitations of the new methods employed in their care.

Since the pioneer work of Johns and Watson in Saskatoon in the summer of 1951, radioactive cobalt teletherapy units have been available for the treatment of malignant lesions. Like other newly developed means of treatment many myths have arisen regarding their effectiveness. Consequently it seems worthwhile to give a radiotherapist's impression of the place of the cobalt unit in cancer therapy.

The introduction of radioactive cobalt as a medical tool is in no way revolutionary, since its biological action is fundamentally similar to that of radium or the rays from a three million volt x-ray generator. In fact, almost all of the advantages and disadvantages of cobalt in the therapy of malignant disease are those associated with supervoltage radiation.

The penetrating power of the cobalt beam is greater than that obtained from a conventional 250 kv. x-ray machine. In fact, comparison of 10 cm. depth doses shows the cobalt unit essentially similar to a three million volt (3 mev) x-ray generator and some 15 to 25% more effective than the moderate voltage unit. This allows delivery of a tumor lethal dose to a deep seated neoplasm with fewer fields and greater ease in treatment.

Cobalt irradiation likewise has a definite skin sparing effect. With a 250 kv. x-ray machine delivery of a tumorcidal dose to a depth requires a dose on the skin several times greater. This results in a moist desquamation which may take weeks to heal and be the limiting factor in the course of radiation. With cobalt, on the other hand, the skin reaction is no longer a deterrent to any plan of treatment. The maximum dose is 0.4 to 0.6

mm. beneath the sensitive epithelium, with the result that the skin is spared and can tolerate doses up to 6000r with only threshold erythema. Anyone acquainted with radiotherapy patients can appreciate the tremendous improvement this represents.

To take full advantage of this skin sparing effect, multiple fields and cross firing techniques are usually used. This may be carried to its logical limit and rotation employed. The 3 mev x-ray generator is invariably cumbersome and rotation must be accomplished by revolving the patient. Unless fluoroscopically controlled in the Neilsen manner, with such rotation, there is an excellent chance of missing the lesion due to a slight change in patient position. Rotational treatments seem much more satisfactory with a cobalt unit similar to the Canadian Theratron or the Keleket-Barnes Rotaray. Here the patient lies quietly on an aluminum table with the radiation source revolving about him and the chance of accidental motion is much reduced.

The third advantage of cobalt irradiation is the essentially equal absorption in bone and soft tissue. With a conventional moderate energy beam, absorption is several times higher in osseous material. This leads to a decreased depth dose in lesions surrounded by bone and makes dosimetry uncertain. It may also be responsible for the post-radiation osteonecrosis occasionally seen with such a unit. Such sequelae should not occur with the cobalt unit since absorption is essentially the same in these tissues.

Radiation nausea, vomiting, and diarrhea represent troublesome problems to radiotherapist and clinician alike. Granted there is a large personal factor involved making them difficult to assess; still they are apparently related to the integral dose or total energy absorbed in the body. Due to the phenomenon of side scatter, 50% more energy is absorbed with a 250 kv. machine than with a cobalt unit in delivering the same dose to a 10 cm. depth. This is apparently responsible for the patient's unfavorable reactions during medium voltage radiation. Cobalt radiation, however, proceeds through the tissue as a direct beam relatively free from side scatter with the result that it is tolerated with less morbidity. Even significant hematopoietic depression is seen less frequently than with low energy radiation.

The complications of cobalt treatment are those associated with other types of radiotherapy. There is perhaps a need for greater skill and experience on the part of the radiotherapist in judging dose since no

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longer does the patient's skin reaction act as a limiting factor in preventing damage to underlying normal structures. Consequently, more attention must be paid to dosage calculations and a well-trained hospital physicist should be available to assist in this respect. Conservatism is important, especially with regard to re-treatment of post-radiation recurrences. The mildness of the previous skin reaction may tempt one to re-irradiate the area. If this is not most carefully done, painful radionecrosis will occur. The other serious complications — cataract, transverse myelitis, factitial proctitis, cystitis, etc. — are those associated with conventional radiation modalities and can be avoided if the known tolerance of sensitive structures is respected.

With the greater penetrating ability of cobalt irradiation it might be thought that the overall duration of treatment could be substantially reduced. Actually, this is not the case. Rates greater than 200r tumor dose per day produce unnecessary complications and consequently the usual course of radiation for deep seated malignancies remains four to five weeks.

From the foregoing remarks it can be seen that cobalt irradiation has no specific cancerocidal action and therefore no fundamental change in radiosensitivity can be expected. Those malignancies which were previously sensitive will remain so; similarly tumors resistant to moderate voltage radiation will not be better affected by cobalt. What tumors then are specifically suited for treatment with this modality?

Until recently radiation treatment of epidermoid carcinoma of the oral cavity was chiefly interstitial radium therapy, since it is extremely difficult to deliver a tumorcidal dose in this area with external irradiation of medium voltage. This still remains true if the malignancy is small and accessibly located in the anterior oral cavity. However, with larger lesions and those in the oropharynx, cobalt radiation offers a better chance for local control, especially if arc therapy can be utilized. By judicious choice of arc and axis of rotation the maximum dose can be so well adjusted to the tumor contour that adjacent normal structures will be only minimally irradiated.

Radiation treatment in oral malignancies in no way replaces the need for radical neck dissection in cases with early cervical metastases. It may be useful, however, if surgery is contraindicated due to fixation of the involved nodes.

Radiotherapy is advocated by Lederman as the treatment of choice for laryngeal malignancies, with laryngectomy reserved for recurrences. While such radiotherapy may be carried on with medium voltage equipment, there are many advantages to using cobalt. The skin reactions with the latter are much less frequent and heal without reaching the stage of moist desquamation. Consequently disfiguring atrophy and telangiectasis are rarely seen. Pseudomembranous mucositis and edema of the arytenoids are also less troublesome.

Similar advantages hold for cobalt treatment of carci-

noma of the paranasal sinuses. Higher tumor doses and more uniform distribution are obtained. However, in this instance the best cures appear to result from using a combination of radiotherapy and surgery, the latter to insure proper drainage of the involved area.

Except in the case of the rare patient who has early bronchogenic carcinoma and refuses operation, cobalt irradiation has little to offer in this disease from a curative point of view. In fact, improvements in the five year survival figures with this form of treatment will probably be disappointingly small. However, the advantage of such treatment cannot be measured only in terms of increased cure rates. Palliation of distressing symptoms must also be considered and this rarely is reflected in such survival statistics. Cough, hemoptysis, superior vena cava obstruction and pain can usually be alleviated with irradiation and the treatment is well worthwhile, since it at least makes the patient more comfortable if his life expectancy is not actually increased. The palliative dose usually given for this purpose can of course be delivered with moderate voltage x-ray machines. However, the decrease in radiation sickness obtained with cobalt would seem worth considering in such a patient.

Malignancies of the GI tract are not usually treated with radiation since the difference in radiosensitivity between the neoplasm and normal intestinal mucosa is slight. However, two exceptions to this rule should be considered: carcinoma of the esophagus and rectum.

Carcinoma of the esophagus has the same poor prognosis as the bronchogenic neoplasm. However, cobalt irradiation is of palliative value in decreasing the patient's constrictive dysphasia without increasing his general discomfort. Neilson has shown that similar results can be obtained using 200 kv. equipment with rotation and careful technique. The advantage of cobalt is to make delivery of the dose easier both for the therapist and the patient.

In rectal carcinoma, abdomino-perineal resection is without doubt the treatment of choice. However, inoperable cases may respond to cobalt irradiation with decrease in bleeding and tenesmus. In this case similar palliation cannot be accomplished with medium voltage radiation, for adequate tumor dosage is prevented by the severe perineal skin reaction which is bound to make the patient still more miserable. The skin sparing effect of cobalt is consequently most welcome.

With urinary bladder malignancies irradiation is again reserved chiefly for palliation. The cure rate is not substantially improved but temporary growth arrest can be obtained and hematuria stopped. Whether this is accomplished with moderate or supervoltage irradiation, cystitis is inevitable. However, it appears to be tolerated better in patients treated with cobalt perhaps because they are not bothered by severe epidermitis as well.

In most institutions the treatment of choice for carcinoma of the cervix is intracavitary radium plus external

irradiation to increase the parametrial dose to tumoricidal levels. With a slim or moderately sized individual a mid-pelvic depth dose of 3000r can be obtained with 250 kv. equipment. In the more obese patient, however, skin tolerance may be reached before this dose is attained. In such cases, the increased penetrating ability and skin sparing effect make cobalt irradiation preferable. This is especially true in the stage IV frozen pelvis where radium treatment may not be utilized. Here a dose of 5000r can be delivered to the entire pelvis — something impossible to accomplish with 250 kv. without severe radiation morbidity.

Breast carcinoma has been treated for years with moderate voltage radiation. However, if the dose to such a patient is carried to the 4000r in four weeks prescribed by McWhirter, a severe painful epidermitis results which may require six to eight weeks to heal. The patient may be spared the discomfort of this trying period as well as the resultant disfiguring atrophy and telangiectases by treatment with cobalt or supervoltage equipment. In such a case, the reaction rarely gets beyond the stage of slight erythema. Treatment of the internal mammary nodes is also a problem for the radiotherapist limited to 250 kv. equipment. Skin tolerance plus the shielding effect of the ribs interfere with an adequate dose in this area. Some therapists feel that pulmonary fibrosis, which occasionally accompanies cobalt irradiation, makes this form of treatment unjustifiable as an adjunctive therapy. So far at the Mary Hitchcock Memorial Hospital this complication has been rare, especially if tangential breast fields are employed.

With five year survival figures in the 80-90% range, Friedman has proved that seminomas can be successfully treated with moderate voltage x-ray. In this case, supervoltage therapy, however, can decrease the overall treatment time from 49 to 13 days with the same biological result and without the skin changes or constitutional effects usually seen with lower voltage radiation. Moreover, the retroperitoneal nodes in embryonal carcinoma and teratocarcinoma of the testis which are virtually resistant to 250 kv. x-rays have been shown to respond to the 4000-5000r dose which can be delivered with cobalt. A rise in cure rates should soon reflect the improved treatment in these malignancies.

Chordomas and sarcomas of bone and soft tissue are also normally considered resistant to radiation. However, with a rotatory cobalt unit Cade has delivered large doses in the range of 7000-8000r to such lesions with excellent results.

Although it is being used more and more in the treatment of malignancy, cobalt irradiation is not suitable for all types of tumors. Superficial carcinomas — such as those of skin, lip, eyelid, etc., — require a high surface dose but low penetration. Consequently, they

are best treated with other forms of radiation. For this reason, a well-equipped radiation therapy department must have a complete armamentarium of radiation facilities to make it possible to individualize treatment in all types of cases.

SUMMARY

An attempt has been made to correct the misconception that cobalt irradiation has any specific action in the treatment of malignancies. Like other supervoltage radiation, its chief advantage lies in a greater penetrating ability and the fact that it makes radiation treatment more tolerable to the patient by decreasing skin reaction and radiation sickness. Its place in cancer therapy is summed up by Carpenter as follows:

"It cannot be expected to perform miracles but where wisely used can be expected to improve, albeit slightly, the ability to cure certain selected cancer and to aid materially in the alleviation of human suffering."

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The Special Care Unit[†]

WILLIAM T. MOSENTHAL, M.D.*

A Special Care Unit is a segregated hospital area in which acutely ill patients are concentrated. The unit is specially equipped, has an augmented local supply, and an augmented staff. The function of such a unit is to provide special, intensive, and expert care for the acutely ill. Such a unit has been in operation at the Hitchcock Hospital in Hanover, New Hampshire, for the past two years, and has proven a valuable asset for the medical staff, the nurses, and the patients.

The reasons for establishing such a unit are many. Primary is the problem of the increasing number of acutely ill in our hospitals. Advances in medical and surgical treatment are producing patients requiring special attention and preserving patients heretofore beyond salvage. These patients need intensive nursing care, yet the supply of nurses is short and unable to cope with the ever increasing load. It is obvious that more efficient utilization of personnel and concentration of effort is essential if we are to fulfill our obligations to these acutely ill patients.

In addition to the primary objective, there is the problem of the nonacute patient who suffers from lack of attention from his floor nurse, or anxiety, and sleeplessness when acutely ill patients are included in his room or ward. This admixture breeds dissatisfaction among both patients and nurses. A segregated area for the acutely ill solves this problem admirably.

Essential to the smooth function of the Special Care Unit are:

- 1) A standard operating procedure as regards administration, transfer, and use of space.
- 2) Detailed, accurate, and complete nursing and charting routines.
- 3) Local Special Care Unit supply.
- 4) Adequate staff.
- 5) Supervisory committee.

STANDARD OPERATING PROCEDURE

1. The staff doctor will be responsible for requesting admission or transfer to and from the Special Care Unit.
2. Patients will be "officially" transferred to the Special Care Unit. No bed will be saved for the transferred patient in another unit.
3. The Admitting Office will not consider the Special Care Unit for admissions.

[†]This is a condensed version of an article scheduled to appear in the December issue of *Modern Hospital*.

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4. Regardless of status (private, semi-private, ward), transfer will be made to that accommodation of the Special Care Unit best suited to the patient's needs.
5. Patients with private duty nurses usually will not be transferred to the Special Care Unit. The head nurse of the Special Care Unit will be responsible for the care of a patient with a private nurse.
6. Visitors will be restricted to the immediate family, with stringent control of the number at the bedside and duration of visit.
7. The staff doctor will be responsible for informing the patient and his family about the Special Care Unit.
8. Patients will not be admitted to the Special Care Unit unless their condition is acute at the time. Patients having extensive surgery will be transferred postoperatively.

Some of these provisions require amplification. If private duty nurses are available, and the patient can afford to hire them, he should not ordinarily require transfer to the Special Care Unit. It is somewhat difficult for special nurses to pick up the charting routines and new forms used in the Special Care Unit. Their presence interferes considerably with the smooth nursing routine of the unit, and the regular Special Care Unit nurses lose intimate knowledge of the patient's course, condition, and treatment when they are not responsible for the case for any 8 to 16 hour stretch.

Care must be taken not to restrict the attendance of the immediate family too harshly. In order to satisfy these visitors and yet have them "out of the way," a decently furnished waiting room in the immediate vicinity of the Special Care Unit is essential.

No difficulty or resistance should be encountered in transfer of patients to the Special Care Unit provided publicity regarding the purpose of the Special Care Unit has been effectively carried out prior to its opening. Without this publicity and personal re-explanation of the necessity of intensive nursing care as provided in the Special Care Unit, the unit might gain a bad reputation, as naturally the mortality rate will be relatively high by comparison with the rest of the hospital. With public understanding, the tendency is to extol the salvage rather than mark the failures.

NURSING AND CHARTING ROUTINE

The nursing routine is the very heart of a successful Special Care Unit. A good routine simplifies and automatically improves the accuracy of the nurse's work. The doctor simply orders "S.C.U. routine," saves him-

NAME
A No.
DATE

INTAKE

OUTPUT

Time	PARENTERAL						ORAL		TOTAL INTAKE	BLOOD ALB Etc	URINE					Emesis	Stool		TOTAL OUTPUT
	FLUID	Cal	Na	Cl	K	cc	cc	Vol.			Sp. G	Ph	TOTAL						
7-8 AM																			
8-9																			
9-10																			
10-11																			
11-12																			
12-1 PM																			
1-2																			
2-3																			
3-4																			
4-5																			
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7-8																			
8-9																			
9-10																			
10-11																			
11-12																			
12-1 AM																			
1-2																			
2-3																			
3-4																			
4-5																			
5-6																			
6-7																			
24 Hr. TOTALS																			

MHMH Special Care Unit

FIGURE 2

supplies are in the unit ready for instant use. Loss of equipment and materials is greatly cut down when the bulk of these procedures is done on one unit. The Special Care Unit nurses are spared a great deal of running around and are kept in the unit.

STAFF

Staff requirements for the Special Care Unit are extremely variable depending on the nature and number of the patients. Occasionally one nurse must devote constant attention to one patient, and conversely, one nurse may be able to care for four or even six patients in an open ward. We have been able to run our unit of 16 beds fairly well with the following staff, supplemented by additional personnel as necessary:

- 1 Head nurse
- 6 General staff nurses
- 5 Senior nursing students
- 2 Practical nurses
- 3 Aids
- 2 Orderlies
- 1 Clerk

Senior students work on the unit for a seven-week period. We have not used younger students, feeling this a poor place for training in the basic nursing arts, and because the acutely ill patients require more mature and experienced care. In addition, the necessity for a fast pace is not good for basic primary teaching.

Nursing hours per patient in the Special Care Unit are six to seven hours; in the remainder of the hospital, two plus hours. This Special Care Unit figure of course is relatively very high and superficially might indicate an exorbitantly high concentration of nursing effort. However, studies conducted prior to the institution of the Special Care Unit reveal interesting data. With acute cases scattered throughout the hospital, an average of ten plus nurses were of necessity assigned to special duty on acutely ill patients daily. The nurses were drawn from the general staff pool (private duty nurses, hired by the patient, are not included in this figure). This is practically enough nursing power to staff our Special Care Unit. Since institution of the Special Care Unit the data shows there has been a drop of about 2000 hours a month of special nursing through-

RESPIRATION		PULSE & BLOOD PRESSURE		TEMPERATURE		NAME A-No. DATE		NURSES NOTES	
55		160		106°		7		7 AM	
50		150		105°		8		8	
45		140		104°		9		9	
40		130		103°		10		10	
35		120		102°		11		11	
30		110		101°		12		12	
25				100°		1		1 PM	
20				99°		2		2	
15				98°		3		3	
10				97°		4		4	
				96°		5		5	
				95°		6		6	
				94°		7		7	
				93°		8		8	
				92°		9		9	
				91°		10		10	
				90°		11		11	
				89°		12		12	
				88°		1		1 AM	
				87°		2		2	
				86°		3		3	
				85°		4		4	
				84°		5		5	
				83°		6		6	
				82°		7		7	

FIGURE 3

INTRAVENOUS Compatible with common IV fluids. Stable for 24 hours in solution at room temperature. Average IV dose is 500 mg. given at 12 hour intervals. Vials of 100 mg., 250 mg., 500 mg.

ACHROMYCIN

THERAPEUTIC BLOOD LEVELS ACHIEVED

Many physicians advantageously use the parenteral forms of ACHROMYCIN in establishing immediate, effective antibiotic concentrations. With ACHROMYCIN you can expect prompt

INTRAMUSCULAR Used to start a patient on his regimen immediately, or for patients unable to take oral medication. Convenient, easy-to-use, ideally suited for administration in office or patient's home. Supplied in single dose vials of 100 mg., (no refrigeration required).

MYCIN 

Hydrochloride
Tetracycline HCl Lederle

IN MINUTES -- SUSTAINED FOR HOURS

control, with minimal side effects, over a wide variety of infections - reasons why ACHROMYCIN is one of today's foremost antibiotics.

out the remainder of the hospital. In other words, the Special Care Unit is providing this necessary care without using more nurses, and obviously doing the job in much better fashion for all concerned.

SUPERVISORY COMMITTEE

We have found it advisable to supervise the activities of our Special Care Unit by a committee with representatives from nursing, medical staff, and administration present. The most important member of a supervisory committee is an interested and influential member of the medical staff who is willing to make regular visits to the Special Care Unit whether or not he has patients in the unit. Strong backing of the nurses by this individual will do much to maintain excellent morale on the unit.

MORALE

The mortality rate is high in the Special Care Unit indicating the serious acute condition of the patients treated in the unit. We use the word "acute" advisedly; moribund terminal cases are not ordinarily admitted. To maintain good morale among the nurses working in a Special Care Unit there must be some possibility of successful outcome to crown their strenuous labors. Loading the unit with terminal cases is the best way to extinguish the optimistic spirit and drive so essential for good nursing care and good morale in the Special Care Unit.

Some caution must be exercised in selecting nurses for a Special Care Unit. Qualities required are vigorous aggressiveness, love of hard work, optimism, and accuracy in detail. Without these qualities a nurse usually does not work out well in such a unit. With these attributes a Special Care Unit nurse rapidly develops into an expert in the care of acutely ill patients, recognizing complications and changes in condition at their inception, thus permitting rapid treatment. Such

a nurse becomes an essential member of the patient care team. Our staff of Special Care Unit nurses has been largely responsible for the salvage of acute patients so obvious since the establishment of the unit.

These nurses do not ordinarily follow a patient to his successful discharge; patients are transferred from the unit prior to full recovery. Conversely, they do see all the failures, and as shown above, the mortality rate is high. In order to prevent discouragement and to promote job satisfaction, successful end results should be communicated to the Special Care Unit staff. Our Special Care Unit clerk maintains a roster of all patients admitted to the Special Care Unit and enters the final result after the patient's name. This roster is available for inspection by the entire unit staff. In addition, the medical staff, aware of the necessity for maintaining morale, reports to the Special Care Unit the outpatient course of ex-Special Care Unit patients, and often sends a "graduate" down to pay a visit to his "alma mater." Such medical staff interest pays big dividends.

As far as patient morale is concerned, there should be no problem if proper publicity at the time of the opening of the Special Care Unit has been effected, and if careful re-explanation of the function of the Special Care Unit and the necessity for this care is made to the patient and his relatives at the time of his transfer.

SUMMARY

Establishment of a Special Care Unit is a satisfactory solution to one dilemma presented in most hospitals today, namely, how to care for an increasing number of acutely ill patients with a diminishing supply of nurses.

Essential features of the operation of such a unit have been discussed with emphasis on the necessity of a routine of special nursing care, and an augmented unit supply system.



Thrombendarterectomy Of The Aorta, Iliacs, Femoral And Popliteal Arteries — Indications And Results

RODGER E. WEISMANN, M.D.*

With the advent of newer diagnostic methods in evaluating patients with impaired arterial circulation and abnormalities of the arterial system, there has been a much more thorough understanding of the pathogenesis, the anatomical and the pathologic nature of the disorder previously known as arteriosclerosis obliterans. Arteriosclerosis is the etiologic factor in more than 90% of patients now seen with disorders of the aorta and its peripheral arterial branches. Although this disease is generally regarded as correlated with age and is often shown to be diffuse in distribution, there are a large number of patients in whom the local manifestations are prematurely responsible for disability and invalidism.

Newer surgical methods of treatment which have been developed in the past 10 years seem to offer hope to many of these individuals and make the prognosis for useful and comfortable existence less pessimistic than a decade ago.

This report deals with our experiences in the use of thrombendarterectomy in the management of occlusive arterial disease of an arteriosclerotic nature, preferably called atherosclerosis. This surgical technique was originally described and attempted in 1947 in Portugal by Dos Santos⁽¹⁾ but during the period of clinical application the feasibility and usefulness of arterial grafting also was demonstrated. It appears that the initial swing of vascular surgeons to replacement or bypassing of occluded vessels with homografts or synthetic materials tended to obscure reports of significant studies in connection with the endarterectomy techniques.^(2,3,4,6)

It is not the intent of this paper to compare these two techniques in their application to occlusive arterial disease problems. Many of the indications for one procedure are the same for the other and the immediate results are roughly parallel in most locations. Long term results of grafting procedures appear to be less satisfactory in femoral and popliteal areas.

Thrombendarterectomy has two main advantages over graft replacement procedures: (1) The use of patients

own viable arterial wall i.e. media and adventitia for the reconstruction of the continuity of the vessel with only the suture material as a foreign body and (2) the retention of existing collateral circulation and return of normal physiologic properties to the reconstructed segments. The principal disadvantage of the technique is that it is relatively more difficult to perform and attended by certain technical problems.

PATHOLOGIC AND CLINICAL CONSIDERATIONS

In general, atherosclerosis is the commonest pathologic manifestation of the degenerative arterial disorders. Since this is primarily an intimal disease it is the significant lesion producing reduction of lumen caliber. It is now a well accepted fact that the disease is highly segmental in character, particularly in the earlier stages, and most marked in the vessels supplying the lower extremities. This is particularly true in those relatively young individuals in fifth and sixth decades who seem prematurely afflicted with impaired arterial circulation. Atherosclerosis actually begins in childhood and since constitutional factors and heredity play an important catalytic role it can be expected to progress more rapidly in some than in others. Thrombotic tendencies and blood viscosity changes enhance or precipitate the rate of further occlusion in narrowed atherosclerotic vessels. Even the thrombosis which is superimposed on the underlying intimal disease tends to limit itself strikingly to segments leaving proximal and distal trunks patent.

Arteriography is now widely applied and has become almost routine in the evaluation of patients presenting the clinical manifestations of subacute or chronic arterial insufficiency. With the widespread use of this valuable anatomical study, a more intelligent management of each problem is possible. Selection of patients for the various reconstructive procedures becomes much more satisfactory and information of prognostic value is much more accurate.

In addition to the x-ray studies much valuable information is obtained by careful history and physical examination with special regard to evaluation by both palpation and auscultation of the pulsations in all major vessels. Oscillometry is a very useful tool to objectively study major arterial pulse volume and will often

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give an accurate localization of segmental disease. Small vessel disease or defective collateral circulation is sometimes more subtle to evaluate and less exact methods of study are available.

Sudden or acute ischemic episodes usually indicate a much more serious problem. In such cases, the collateral circulation is inadequately established or compromised by spasm or thrombosis; the process may not remain localized but may progress both proximally and distally in major trunks. Usually extensive disease in the terminal branches is present when gangrene or ischemic lesions of the foot are present.

As our experience with chronic occlusive arterial disease developed, a more thorough evaluation of the anatomic extent of the pathologic process became possible. Our concept of the clinical manifestations of the atherosclerotic lesions of the aorta, iliac and femoral and popliteal arteries had to be modified from previous understanding. It became clear that many of the patients previously treated might be given a more satisfactory result with newer surgical techniques. Although some patients were selected for operation who probably had hopelessly involved arteries, we felt that we gained from them useful information about the limitations of these surgical procedures.

A great deal of information regarding the magnitude of the surgery involved and the tolerance of patients with various degrees of local as well as generalized atherosclerosis was obtained. With modern anesthesia and blood replacement, as well as all of the other important available adjuncts to modern surgical care, it appeared possible to extend the indications for surgical treatment of disabling and serious arterial disorders.

Ideally, direct arterial surgery to establish continuity of blood flow in occluded arterial segments should be most successful in those patients in whom the inflow and outflow of arterial blood is not significantly diminished. Experience has shown us to date that we need not necessarily have ideal conditions to obtain an excellent result. In order to extend benefit of such surgery to more patients, we no longer feel it necessary to have patent leg vessels if the artery immediately distal to the occluded segment is open to the nearest major bifurcation. Likewise, the inflow tract can be reduced in caliber by at least 50% and velocity of inflow into the operative segment can still be adequate to maintain patency.

SELECTION OF PATIENTS

(Fig. 1) Patients with claudication as the chief problem, with little or no distal ischemic signs, constitute the primary group from which a final selection is made for thrombendarterectomy procedures. On the basis of the history, the site of claudication and the amount of effort required to produce the symptoms, the location and extent of the occlusive process is often established. While calf claudication is common to all

levels of obstruction above the popliteal bifurcation, claudication in the thighs, hips or buttocks suggest obstruction at levels of the femoral bifurcation or higher. Many of our patients in this group were incapacitated for their occupational activities or markedly limited in their physical accomplishments. Their inability to work because of these symptoms resulted in a considerable economic burden. As will be seen in this series of cases, the majority were men in their forties, fifties and sixties whose presenting symptoms were claudication of sufficient degree to interfere with their work. (Tables I and II)

When the process involved only one lower extremity, it was common to find quite good pulsations and acceptable oscillometric readings in the opposite extremity. Usually bilateral symmetrical symptoms and signs portended a more widespread disease or segmental involvement at the distal aortic level.

On palpation of the pulses including the aortic, iliac and femoral vessels, a quick estimate of the location and extent of major trunk occlusion could be arrived at. Popliteal and pedal pulses were not usually felt in patients with total segmental occlusions at femoral level or higher. Occasionally a weak dorsalis pedis pulse could be made out when only the aortic or iliac segments were occluded.

When incomplete occlusions or stenotic lesions of the aorta or iliacs produced claudication, the femoral pulses were usually markedly diminished in volume or not palpable but a high pitched systolic murmur or bruit could be heard over the course of the vessel distal to the occlusion. Incomplete occlusions can produce symptoms identical with complete occlusions.

An additional procedure done at the time of initial evaluation was the careful oscillometric study of both lower extremities. This is an extremely valuable method of localizing occluded segments distal to the femoral bifurcation in addition to giving a rough estimate of the flow into the extremities via the iliac and femoral vessels when partial or complete occlusions exist above the femoral bifurcations. There were noted distinct oscillometric patterns for single segmental occlusions and when such were found the anatomical extent of the disease could be accurately predicted. When combined lesions occur at various levels, the oscillometric pattern was variable but recording of this study was of value for future reference in evaluating progress of the disease or response to treatment.

Another group of patients among which a smaller number of candidates for thrombendarterectomies were found were those presenting more acute symptoms. These were persons with rather sudden onset of numbness, temperature changes, digital pain and severe foot and calf claudication with or without preceding symptoms of claudication. In a few the process had progressed to impending or actual gangrene of one or more of the digits but remained relatively stationary. In this secondary group it appeared that an acute throm-

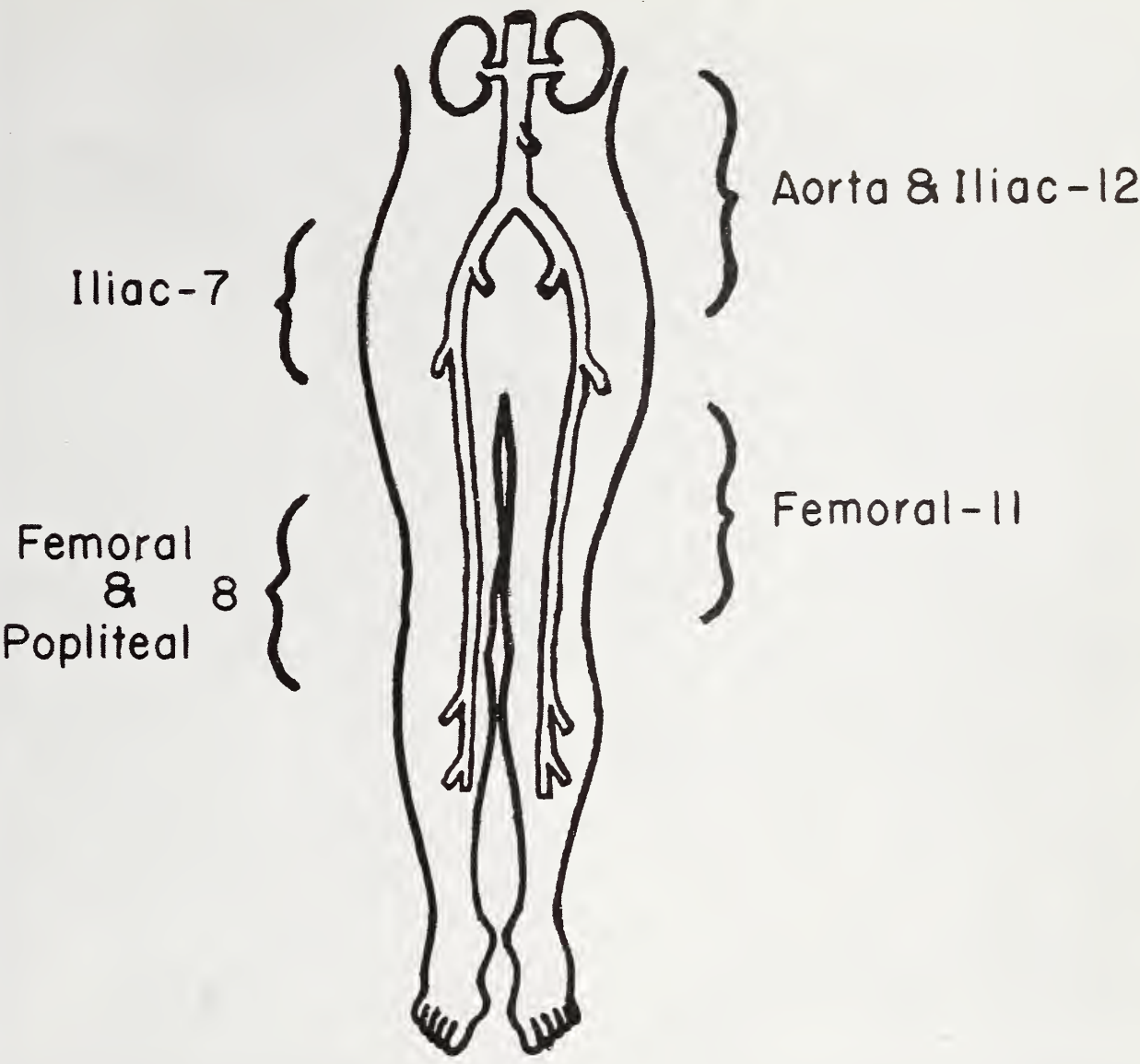


FIG. 1. Diagram showing anatomical sites of endarterectomy in 38 cases.

bosis or progression of existing subtle thrombotic process either in collateral segments or terminal branches had occurred and that a more serious situation existed. The immediate problem was to limit the thrombosis and tissue loss. When this had been accomplished and the process appeared stationary, patients were evaluated for thrombendarterectomy before considering amputation. If clinical and x-ray studies demonstrated lesions similar to those in the primary group, thrombendarterectomy was strongly considered.

Finally the selection of the patient for thrombendarterectomy depended on the presence or absence of other significant vascular or unrelated disease processes. Aortic and iliac thrombendarterectomies are hazardous in patients over age 60 and patients over this age must be selected with great caution. In the extremities the procedure could be used in much poorer risk patients. Several patients with femoral or popliteal occlusive disease had clinical and electrocardiographic signs of coronary artery disease.

ARTERIOGRAPHY

The final decision regarding applicability of thrombendarterectomy could usually only be made with confirmation of the location and extent of occlusions by a reliable objective method. Aortography and femoral arteriography have been very valuable and provided such confirmation. While several of our cases with aortic and iliac occlusions had been operated without preliminary aortography, I felt much more satisfied if a satisfactory delineation of the distal arterial segments could be obtained from contrast arterial studies. In some instances previous sympathectomies had allowed a sufficient palpation of the involved aortic and iliac segments to confirm diagnoses and to evaluate the disease process. This method should be utilized whenever possible, particularly if preliminary sympathectomies are felt necessary.

There were certain limitations to arteriography and they did not always give a completely accurate study of degree of partial occlusions and the degree of atherosclerosis of unoccluded segments might have been un-

derestimated. In some instances segments that were not occluded might not have filled with the contrast media and the apparent absence of an outflow tract might have made the surgeon refuse to proceed with thrombendarterectomy.

It is now our practice to carry out aortography almost routinely in patients with distal aortic or iliac occlusions several days before proceeding with direct approach to the vessels for thrombendarterectomy. Our technique includes simultaneous films of the thighs and and pelvis and a remarkably satisfactory study of the major vessels of the pelvis, thighs and knee areas can be obtained. (Fig. 2)

When clinical evaluation suggested that the principal sites of disease were below the inguinal ligaments, femoral arteriography was planned as the initial step of the proposed thrombendarterectomy. Usually long-acting spinal anesthesia was administered and a percutaneous arteriogram obtained. (Fig. 3 and 4) The films were evaluated and if the confirmation of the diagnosis was obtained, it was possible to proceed with the thrombendarterectomy immediately. In some instances, either on clinical grounds or on the basis of x-ray findings, I felt it justified to carry out lumbar sympathectomy at this stage rather than thrombendarterectomy. The latter procedure could be done within a week or so or postponed for a sufficient period to ascertain response to sympathectomy.

OPERATION

Aortic and iliac endarterectomy procedures were in general technically more satisfactory because of the ease of dissection of the vessels and ability to evaluate extensive portions of the arterial systems palpable through a transperitoneal approach. The procedure, however, was a long and traumatic one for the patient

and the surgical team when both iliacs had to be dealt with. The size of the vessels made them easier to handle. (Fig 5) Since they had been occluded for some time preceding the surgery, there was no concern regarding serious ischemic effects of distal parts from interruption of blood flow through operated segments during the procedure. The blood loss problems from extensive collateral back bleeding into the main trunks plus small leaks which had to be repaired were reduced by the use of hypotensive drugs during surgery at judicious times. Heparin was used for intra-arterial irrigations and also intravenously during the procedure to maintain a reduced clotting mechanism till all trunks were freely open. It was occasionally necessary to expose and explore the femoral arteries at the same procedure to make sure a patent run off existed to the femoral bifurcation. I did not feel it was necessary to deal with more distal occluded segments at that procedure.

The aorta could be satisfactorily endarterectomized up to the renals and slightly beyond. In one case in which compromise of the renal artery orifices by severe atherosclerosis and thrombosis had produced a severe hypertension, it was technically possible to endarterectomize the aorta 2 or 3 cm. proximal to the renals through the linear aortotomy incision distal to the renal arteries. This patient succumbed three days postoperatively; however, it was with renal shutdown and coronary insufficiency. This has been reported as being successfully done by others⁽⁵⁾ and I should like to have the opportunity to try it again.

The remaining wall of media and adventitia in the endarterectomized segments was entirely satisfactory for reconstruction to water tight suture line even in the presence of a moderate or severe intra-aortic hypertension. In one case only was it necessary to abandon attempts to reconstruct an endarterectomized com-

TABLE I
INDICATION FOR OPERATION

	<i>Disabling Claudication</i>	<i>Acute Thrombosis Or Embolism</i>	<i>Impending or Actual Gangrene of Foot or Toes</i>	<i>Total</i>
Aortic and Iliac	14	3	2	19*
Femoral and Popliteal	12	1	6	19**

* 2 Diabetics
** 3 Diabetics

TABLE II
AGE AT OPERATION

	40-49	50-59	60-69	70-80	81-90	<i>Total</i>
Aortic and Iliac	5	10	4	0	0	19
Femoral and Popliteal	5	3	8	2	1	19



FIG. 2. Aortogram with two film technique demonstrating total occlusion left iliac and femoral artery with partial segmental occlusions right iliac and femoral arteries. Note patent popliteal and leg vessels. This patient has restoration of pedal pulses after aortic, bilateral iliac and left femoral endarterectomies.

mon iliac segment; it was replaced with a segment of prepared nylon tubular prosthesis. It is rarely necessary to replace the major aortic or iliac segments with homografts or synthetic prosthesis but either should be available to the vascular surgeon at all times. Some degree of aneurysmal dilation may co-exist with occluded segments as it did in one case and then excision of the involved segments and replacement with graft would be preferable. In general, however, the aorta and iliac vessels were mildly to moderately contracted with the organized intraluminal disease and no aneurysm was usually seen with these lesions. After reconstruction of the vessel wall there was re-expansion to quite normal caliber. (Fig. 6)

During the aortic and iliac procedures, sympathectomy can be done bilaterally prior to proceeding with the endarterectomy. It is our feeling that most patients in this group should have concomitant sympathectomy.

The femoral and popliteal systems may be approached with less risk but if one elects, as we have, to use the open technique of endarterectomy rather elaborate incisions and dissections are required to obtain adequate exposure. No significant collateral vessels are destroyed but are maintained intact with the main trunks. It may be necessary to work through a separate posterior popliteal incision as well as one or two antero-medial thigh incisions, particularly for lesions at and below the adductor ring at the lower end of the adductor canal. This incidentally is one of the commonest sites for the process.

High femoral or local popliteal lesions were relatively easy technically since exposure through a single incision of the inflow and outflow tract was usually possible. In spite of the smaller size of the popliteal artery, the popliteal segmental lesions proved to be extremely amenable to this surgical treatment.

Occasionally it was advisable to explore the popliteal vessel initially to establish the operability of the entire problem. Some of our early failures on the femoral systems could have been eliminated by an initial popliteal exploration and probable abandonment of the plans. In spite of extensive popliteal disease, if a backflow from anterior or posterior tibial vessels was obtained it was often possible to obtain a very satisfactory result with extensive femoral-popliteal endarterectomy.

COMMENTS ON POSTOPERATIVE CARE

There are three essential principles involved in the postoperative care of these patients. First, an adequate replacement of all blood loss and maintenance of normal or slightly elevated blood pressure is mandatory. If blood volume has not been restored, there is peripheral vasospasm to promote homeostasis of circulatory volume and reduced peripheral flow may be disastrous. Secondly, maintenance of anticoagulant effect by systemic heparinization is of prime importance. There is a

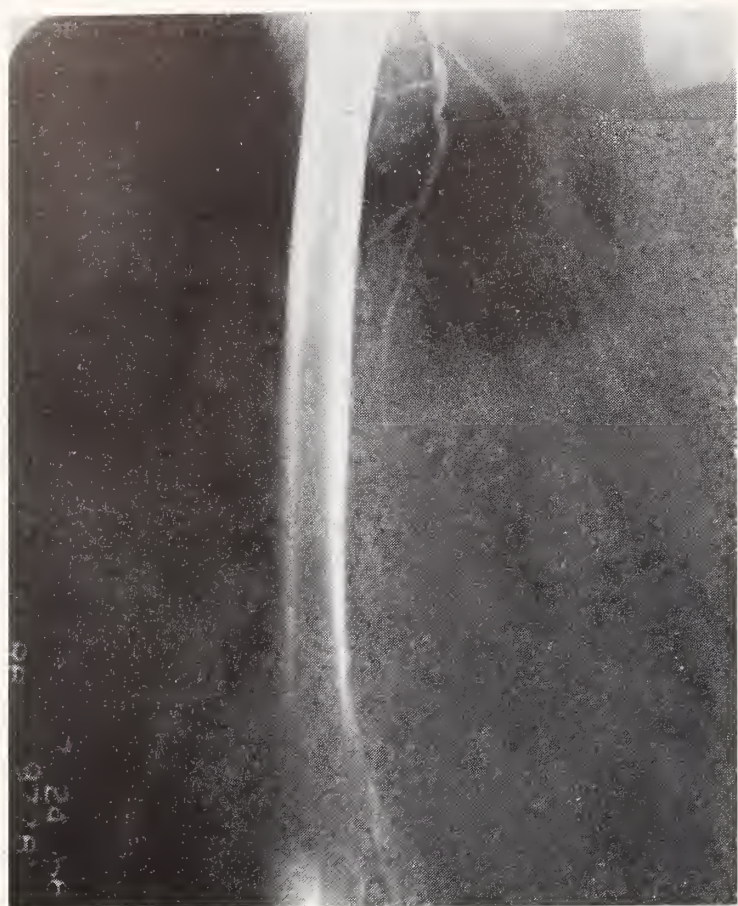


FIG. 3. Femoral arteriogram (closed) demonstrating extensive total femoral artery occlusive disease from bifurcation of femoral artery to upper popliteal artery. Note patent popliteal vessel. Patient had successful femoral endarterectomy.



FIG. 4. Bilateral closed simultaneous femoral arteriograms demonstrating extensive total segmental occlusions of distal left femoral artery and mid portion of right femoral artery. Patient had successful left femoral and popliteal endarterectomy and will return later for procedure on right femoral.

delicate balance to maintain because oozing and hematomas from fresh areas of dissection occur promptly with too vigorous therapy and if insufficient heparin is used, particularly for femoral and popliteal procedures, early thrombosis may develop. We have also observed embolization from sources in the aorta to extremities in patients in which too vigorous heparin therapy was used beyond the sixth or seventh postoperative day. Thirdly, immobilization and rest is quite rigid during the immediate healing period particularly of femoral and popliteal procedures. Vigorous flexion of the knee may compromise the lumen of the operated segments or distort the suture line producing a rapid leak from the arteriotomy wound. Ambulation may be started with benefit by the fifth or sixth day but the patient should avoid flexion of the knee beyond 30 degrees for at least 12 days postoperatively.

Isolated problems should be dealt with promptly particularly if the arterial flow is in jeopardy. Antibiotics are not used prophylactically but if some suspicion of sepsis or contamination exists the patient should be given an effective antibiotic.

RESULTS

Aortic and Iliac Cases: There have been three operative deaths among the 19 cases who had aortic and

iliac endarterectomies. Two of these patients died of shock and postoperative retroperitoneal bleeding but essentially were too poor a risk for the procedure. The other death was mentioned earlier as the patient who succumbed from anuria and coronary insufficiency. His procedure was far too extensive for a patient with his degree of disease. Two patients lost an extremity developing ischemia from unsatisfactory restoration of flow through the operated segment. Two other patients died one week and seven weeks later of complications from gangrenous extremities which existed prior to thrombendarterectomy. All the remaining patients have excellent results from rehabilitation and in most instances returned to full employment and activity. Peripheral pulses at femoral level have been restored in all. Pedal pulses have returned in most instances.

The longest follow up of the aortic and iliac group is now three years and five months. This patient has been seen regularly and enjoys full use of his extremities and is employed as a postman for house to house mail delivery. There has been postoperative observation recently on all cases and no evidence of aneurysmal dilation or re-occlusion of further segments has been recognized. Insufficient time has elapsed to evaluate the usefulness of additional sympathectomy in the long term result.



FIG. 5. Diagram of aortotomy and arteriotomy incisions made for aortic and iliac endarterectomy. The intima and thrombosed lumen has been removed from the right iliac and distal aorta. The intima is protruded on left and is to be shelled out.

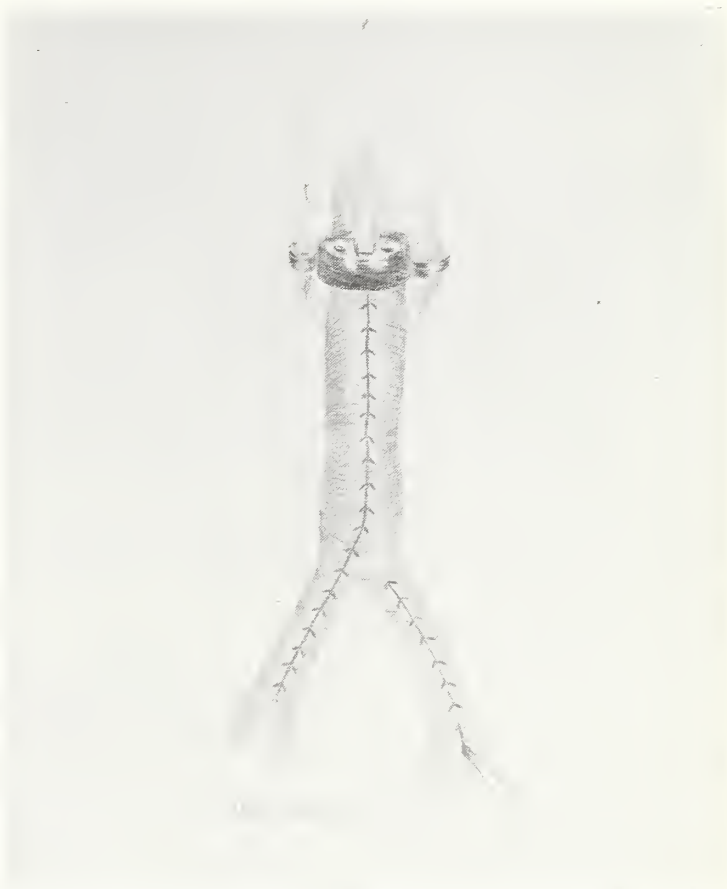


FIG. 6. Appearance of the vessels after closure of the media and adventitia and restoration of the lumen.

In the *Femoral and Popliteal group*, more advanced and seriously ischemic extremities were selected in our attempt to learn the limits of the procedure. One patient died of repeated embolisms from the proximal aorta to the brain as well as the legs. Femoral endarterectomy had been undertaken to try and salvage a hopeless ischemic painful extremity several weeks after one of her embolic episodes.

In the entire series of femoral and popliteal endarterectomies, the results were excellent in 10 of 19 cases; two other cases were much improved. Two cases were unimproved because of thrombosis of the operated segment during the immediate postoperative period. Patients whose operated segments were patent at the time of dismissal from the hospital have main-

tained their improvement and no late thrombosis of the operated segments have been observed in cases followed from one month to two years. One patient returned because of some recurrence of digital pain. His repeat arteriogram taken six months postoperatively revealed a patent femoral and popliteal segment. A lumbar sympathectomy was performed with relief of his recurrent digital symptoms. Claudication had not recurred.

Sympathectomy was not used in conjunction with the surgical treatment in most cases of the femoral and popliteal group. In a few it had been performed as an initial procedure in the treatment of the problem, but because of an inadequate improvement, thrombendarterectomy was performed. As yet, there is no proof

TABLE III
COMPILATION OF RESULTS

	<i>Excellent</i>	<i>Improved</i>	<i>Not Improved</i>	<i>Amputations</i>	<i>Deaths</i>	<i>Total</i>
Aortic and Iliac	11	1	—	2	5*	19
Femoral and Popliteal	10	3	2	3	1	19

*Includes 3 operative deaths and 2 from other complications.

that sympathectomy will provide a more satisfactory result in patients with operable segmental lesions.

SUMMARY

Among the many patients with disability from impaired arterial circulation of the lower extremities due to atherosclerosis, it is possible to select a significant number who will be benefited by radical direct arterial surgery and to a degree not possible a decade ago.

A report of our experiences with thrombendarterectomy in the management of some of the acute and chronic occlusive arterial disease problems is presented. The method of selection of patients and results to date are reported.

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Cervical Arthritis And Spinal Cord Dysfunction

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Progressive spinal cord dysfunction may be caused by degenerative arthritis of the cervical vertebrae. This disturbance may eventually cause a total paralysis of arms, legs, urinary and bowel sphincters. As soon as there is progressive disturbance of cord function we believe that cervical laminectomy is indicated.

Until the past twenty-five years the intervertebral disc has received little anatomic and pathologic investigation. Vesalius in 1595 noted differences in consistency between the nucleus pulposus and its surrounding ring, the annulus fibrosus. In the latter part of the 19th century, the development of the spine and the relation of the fetal notochord to the formation of the disc was established. Schmorl indicated that a defect in the annulus might allow herniations of the nucleus pulposus into the spinal canal. Neglected for so long was the observation of Bailey and Casamajor that arthritis of the spine could cause spinal cord compression. They even indicated that a decompression of the spine should be done for paresis based on arthritis. Stookey in 1928 indicated that pressure on the anterior part of the spinal cord could be exerted on one or both sides by "chondromas" which took their origin from the interspace or disc. He regarded the tissue as probably being neoplastic. This misconception persisted

until the classic paper of Mixter and Barr which very clearly stated that herniations of the disc were the result of degeneration of the cartilage. Peet and Echois soon after this indicated that the 50 cases of nodules removed from discs and labelled chondroma were in fact nothing more than herniations of the nucleus pulposus.

At first there was reluctance to accept the fact that herniations of the nucleus pulposus could cause root or cord compression. Semmes and Murphy in 1943 contended that most cases of radicular pain in the arm (previously diagnosed as wry neck, brachial neuritis and scalenus anticus compression) were caused by cervical disc protrusion. Still no recognition was made of the possibility that cervical disc protrusion might cause paraplegia. Bucy and his associates in 1948 found that many cases of spasticity and progressive unsteadiness were labelled multiple sclerosis, primary lateral sclerosis or anyotrophic lateral sclerosis. He found these actually to be midline cervical protrusion and stated "Every patient suspected of suffering from a degenerative disease of the spinal cord should have a lumbar spinal puncture and if there is any suspicion that there might be a herniated cervical intervertebral disc, a myelogram with pantopaque or lipiodal should be made." He suggested that surgical therapy be instituted for cases refractory to conservative management.

Brain in a series of four papers did much to clarify distorted thinking up to this point. He presented accurate clinical pictures of progressive cervical

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arthritis which he eventually labelled cervical spondylosis, a term now used to indicate cord or root compression the result of cervical arthritis. He indicated many cases are not of traumatic origin and that "spinal compression always calls for surgical exploration."

The etiology of disc protrusion is not known. Our interest in this paper is confined to the ridge or bar which decreases the volume of the spinal column.

Cervical osteoarthritis may occur without the onset of trauma. The intervertebral disc may desiccate with age and the space narrow. As a result bony surfaces are approximated and may in turn set up bony osteophytic reaction which decreases the size of either the nerve root foramen or spinal canal with resulting compression. This bony ridge formation may partially occlude the anterior spinal artery with spinal cord anoxia which leads to scarring of the cord and loss of nerve cells. Furthermore, recent evidence suggests that the arachnoid may become scarred.

Brain found that the myelopathy of the spinal cord as a result of cervical arthritis is the commonest disease of the cord during and after middle life. He also felt that the dentate ligament compresses the spinal cord.

Clinically these cases will show varying degrees of motor and sphincter embarrassment. Most will progress slowly and steadily, although Barnes reported six patients who had a total sudden paraplegia as a result of injury to an arthritic ridge with very little x-ray change.

At the onset, there usually is weakness and stiffness of the legs with little if any neck complaints. The leg weakness may progress but paresis of the sphincters will not usually occur until late in the course of the disease. Clonus, weakness of the legs and a Babinski response will occur from progressive pyramidal tract involvement. Atrophy is not seen except in the hands. The arthritic ridge may give a unilateral weakness with sensory disturbances on the opposite side. The sensory disturbances are not major at first; the legs may feel heavy or prickly, iciness may occur in the hands, pins and needles may occur in the trunk or hands. With time, anaesthesia may develop from the waist down plus inability to use the hands and fingers followed by stiffness of the neck or shoulder pain. In the past confusion with degenerative and neoplastic disease has not allowed many of these cases to be adequately treated.

The roentgen findings will vary greatly and will not necessarily be consistent with the clinical picture; they usually, however, can be correlated to the myelographic picture. The most characteristic finding is narrowing of the interspace with spicule formation anterior and posterior to the body of the vertebrae. This narrows the spinal canal and occludes the nerve root foramina. Calcification may occur in the interspace. Straightening of the spine or subluxation may occur due to cervical muscle spasm. The 5th and 6th cervical interspaces are most frequently involved although Brain emphasizes the possibility of multiple lesions.

Because of certain poor correlation found between

the roentgen and clinical findings, Pallis examined a series of 50 routine, non-neurological admissions all over 50 years of age. Twenty-eight per cent had evidence of cord or root involvement.

Diagnostic myelographic examination is now used extensively. Routine manometric and spinal fluid studies may aid in the diagnosis. Obstruction to the passage of pantopaque may be complete or partial; and also may be found at more than one interspace. Flexion—extension myelogram films give more detail about the nature of the cord compression.

The treatment of this condition has resulted in few spectacular cures, but rather has been directed at arresting the progressive neurological involvement. Brain in a paper delivered before the American College of Physicians in 1954 said that treatment is begun with immobilization of the neck in a plaster collar which is converted to a plastic collar after several months. They find little value in cervical traction or roentgen therapy directed at the neck. They hold cervical laminectomy as a last resort and then prefer to operate on young patients with degeneration of only one interspace. Decompression of the spine for cervical arthritis has been done for at least 45 years. Parker and Adson's case was markedly improved by surgery as early as 1925.

A cervical laminectomy involves a so-called decompressive operation by removal of spinous processes, laminae and yellow ligaments. These tissues by their presence prevent posterior displacement of the cord by the arthritic ridge. Attempts at removal of the ridge have ended in paraplegia, and most surgeons now make no attempt to remove this bar except Mayfield who has devised curets which may excavate this material. Kahn in 1947 stressed the role of the dentate ligaments compressing the cord, and his advice to section these is gradually followed.

Brain and Northfield reported 21 cases operated on with cervical laminectomy and dentate ligament resection. Marked improvement was noted in four, moderate in four, slight in six, and no improvement in five. Fourteen of the 19 showed motor improvement, and in 16 the sensory status was better. Bucy pointed out that poor results were obtained in long standing symptoms.

A small percentage of cases of cervical arthritis will develop cord and root compression. We are inclined to undertake surgical exploration only as a last resort if all other measures fail. We believe that laminectomy with dentate ligament resection is the procedure of choice and no attempt is made to remove the ridge. Our results below indicate that three cases were much improved, two were slightly improved, one was arrested, and one was worse.

Case 1 N. N. A 39-year-old male machinist had a five-year history of weakness and unsteadiness of his legs and numbness of the 4th and 5th fingers. He was thought to have a myelitis from excessive drinking. He had a wide-based, spastic gait. The biceps and abdominal reflexes were absent while the triceps and leg

reflexes were much increased with a bilateral Babinski. Vague areas of hypalgesia were present over both thighs. Routine and myelographic films demonstrated ridges at C 5-6 and C 6-7, with the Queckenstedt response showing a block. The spinal fluid protein was 50 mgs. per cent. At surgery, laminectomy of C 5, 6, 7 showed the ridges, and three pairs of dentate ligament were resected. In two weeks the Babinski response was plantar bilaterally and the motor function was much improved. He has returned to his former job of plumbing. No sensory abnormalities are present.

Case 2 G. Y. A 52-year-old male mechanic had a three-month history of neck, left shoulder and arm pain. Numbness of both hands, and constipation were present. He had an unsteady gait and "lameness" of the left foot. Examination revealed weakness of both triceps, the right biceps and the left anterior tibial muscles. The reflexes were increased in both arms and the left leg, but the right leg had no reflexes, the result of infantile paralysis. No abdominal or cremasteric reflexes were present. Clonus was present in the left ankle. Hypalgesia and hypesthesia were noted below C 8. X-rays showed hypertrophic changes at C 5-6. A partial block was found by myelogram at C 5-6. The spinal fluid protein was 137 mgs. per cent. Laminectomy and dentate ligament resection at C 5-6 was done, and pulsations of the cord which had been absent returned on sectioning the dentate ligaments. He has been followed four years. His left arm is now normal. He plays the piano and has worked since two months after his operation.

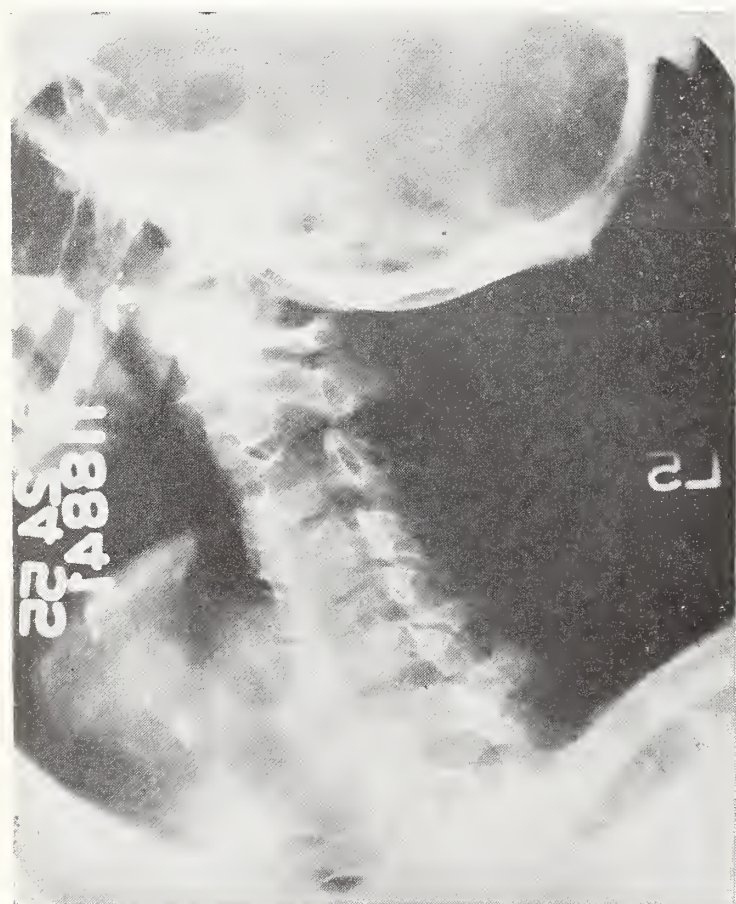


FIGURE 1

Case 3 N. W. A 72-year-old housewife had severe pain in the neck with suboccipital and infrascapular pain which radiated down the right arm. Examination disclosed an unsteady gait, restricted neck motions, C 5 hypesthesia on the right, spasticity of both legs and a bilateral Babinski. The 4th and 5th cervical interspaces were narrowed with marginal spurring. Ridges at these spaces were confirmed on the myelogram. The Queckenstedt response and the spinal fluid protein were normal. A cervical laminectomy of C 4, 5, 6 was done with decompression of the nerve roots. She was relieved of pain, and her motor status has been arrested over two years.

Case 4 C. K. Twenty years before admission a 56-year-old farmer experienced a sudden weakness of both legs and numbness of the left arm while loading hay. The weakness lasted three months. The left arm numbness persisted, and later the right arm became numb. He eventually complained of constipation, frequency and nocturia, and was thought to have multiple sclerosis. His examination in 1952 showed clonus, bilateral positive Babinski and increased reflexes. Vibratory sensation was lost in the legs, and pain perception diminished in the left hand. Minimal arthritic changes were found by x-ray, but a ridge at C 5-6 showed in the myelogram. The Queckenstedt response indicated a block. Laminectomy at C 5 and 6 promptly relieved his arm numbness and improved the strength in his legs.

Case 5 L. H. A 47-year-old farmer had a two-month history of stiffness, jumping legs, difficulty in walking, tingling of the right arm and frontal headaches. He



FIGURE 2

was occasionally incontinent of urine. There was increased tone in all reflexes, more marked in the legs than arms. The Babinski response was positive on the right and abdominal reflexes were absent. The left arm was weak and hypalgesia extended from T 4 to T 11. A myelogram demonstrated a complete block at C 5 although the Queckenstedt response was normal. The spinal fluid protein was 53 mgs. per cent. The ridge was exposed at C 5-6 and the cord was decompressed. His arms are stronger and he is no longer incontinent. His leg weakness has not progressed.

Case 6 J. S. A 58-year-old male retired policeman had diabetes for many years and three years prior to admission experienced weakness of his legs which was thought to be diabetic neuropathy. His legs got worse and numbness occurred in both hands. Reflexes in both arms and legs were increased with bilateral positive Hoffman and Babinski response. The legs were stiff and marked peroneal weakness was found. Hypertrophic ridging was found at C 4-5 by x-ray and myelogram. The Queckenstedt response was normal, and the spinal fluid protein was 47 mgs. per cent. A laminectomy of C 4 and C 5 was performed with resection of dentate ligaments. Convalescence was complicated by an extradural hemorrhage which was removed. His motor weakness has been arrested, and he walks about caring for a motel.

Case 7 D. S. A 57-year-old male executive had noted weakness in his hands and left leg when playing golf or skating. He had had occasional episodes of fecal

incontinence for many years. With increased difficulty in his balance and tingling in his right arm, he was thought to have "spinal cord degeneration." Weakness of the left shoulder girdle and left hand were more marked than on the right. The left arm and leg were spastic. A left Babinski response was positive. Sensory examination was normal. X-ray and myelographic studies revealed extensive ridging at C 4-5, C 5-6. Spinal fluid protein was 18 mgs. per cent, and the Queckenstedt response was normal. Laminectomy at C 4, 5, 6 disclosed a flattened, pulseless cord which was much improved by sectioning three pairs of dentate ligaments. He showed definite improvement in his motor strength. Six months later further recovery was complicated by the unrelated development and treatment of rectal cancer. Much postoperative distention occurred, and with his prolonged hospital stay his motor status again became weaker. Eighteen months after the original laminectomy, a more extensive procedure was done with resection of two more pairs of dentate ligaments. His course has been one of progressive weakness since surgery, although he still manages to get about with canes three years after his original operation.

We are impressed that failure occurred in only one of our seven cases. The other six were improved or arrested. We believe that this lesion is more common than is realized; we do not believe the prognosis to be hopeless. We are urging more careful study of the cervical spine in progressive neurologic disease.

SUMMARY

We have reported seven cases of cervical arthritis with cord compression, treated by laminectomy and section of the dentate ligaments. Improvement or arrest resulted in six.

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FIGURE 3

Continued on page 423

Guest Editorial

The Two-Year Medical School — Its Role In The Doctor Production Problem

JOHN P. BOWLER, M.D.*

From whatever point one approaches the problem, the fact is clear that there is a real and potentially increasing shortage of doctors. To prove statistically that the doctor population has kept step with the general population during the past one or two decades is beside the point. It neglects the factor of the growing demand for medical service that has brought the problem into sharp focus. It neglects the factor that this demand for medical care has been accompanied by a degree of public interest leading directly to the expenditure, by the doctor, of more time per patient. This is especially true with the older patients. It also neglects the decreased output on the part of the individual doctor, a fact related perhaps to the shortening work week. In other words, there is a relative as well as an absolute shortage within the doctor population.

We have been informed as to studies, as yet unpublished, which indicate that by 1970 the projected population with its sizable increase in the older population group, plus the steadily increasing demand for research personnel, will require an increased doctor production of at least 2500 annually above the present rate. The two-year medical program offers an important potential contribution to the solution of this tremendous problem. To produce 2500 more doctors each year by 1970 would require 100 graduates per year from each of 25 new medical schools. Under present estimates, each one of these schools would represent a capitalization of forty-to-fifty million dollars. It is doubtful whether the national economy will provide for such a large program in a single area of education. On the other hand, in the right setting, a two-year school associated with a college of liberal arts and turning out approximately 50 men could be established with a capitalization estimated at approximately eight-to-ten million dollars. These figures provide a significant clue to the most economic way to produce more doctors.

The need is for demonstration. There are a number

of colleges of liberal arts in which such a program could be incorporated. The teaching and research programs in the field of basic medical sciences can radiate much strength to the job of the college of liberal arts. It can bring to a campus a group of men whose scholastic standing and motivation can be a stimulating influence on undergraduate scholastic attitudes. It can delay rather than speed up the segregation of the medical student, emphasizing the atmosphere of liberal education rather than that of technical training. Thus, a two-year medical school can be well rooted in the spirit and atmosphere of the liberal arts college, and the assets of a common program can be beneficial to each.

At the other end of the process, the two-year medical school can be closely anchored to certain four-year medical schools through mutually beneficial affiliation. There are many four-year schools in large metropolitan areas that could now increase the enrollment in their third and fourth years at relatively small cost by availing themselves of clinical facilities not presently in use. This is not a theoretical supposition — it is already occurring in certain institutional relationships.

Here, in summary, is where the two-year medical program comes in. Having existed as a neglected child for several decades, it can fill a large and important role in the immediate future. There are only a few remaining areas where the development of new four-year schools is possible. On the other hand, there are a number of existing four-year schools which could handle more students in the last two years than in the first two. Herein lies the future of the two-year medical school. The theory should have a thorough performance run. If successful, it could prove that the need is for more, not less, two-year schools in close association with colleges of liberal arts so located as to provide the clinical necessities of the first two years. The present problems in the medical field and the factors that have given rise to them are new. The search for a solution will require a new rather than an old and traditional look.

September 18, 1957

*Chairman, Policy Committee, Dartmouth Medical School.

The Journal of the Maine Medical Association

DANIEL F. HANLEY, M.D., Brunswick, Editor

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Across The Desk

Was It Worthwhile?

What happened to the Polio-Immunization Program is a question we hear very often these days. As you well remember, the doctors of Maine sparked a program last spring to "immunize all under age 60."

How well did the program go over? How many were immunized? These are the questions of the skeptics, and as they well realize, no one actually knows the answers. Statistics have been difficult to gather, and in some areas, "guesstimates" were all we could get.

Those of us who enjoy believing there is some good in everything will derive some small satisfaction from the only figures that are available.

Polio in Maine — 1957

Total — 6 cases; 2 paralytic, 4 non-paralytic

The best previous year was 1939 (5 cases; 4 paralytic, 1 non-paralytic) when the recognition and reporting of non-paralytic polio in Maine was much less common than today and the population was smaller.

As one goes over the Department of Health and Welfare records for polio in 1956, it becomes apparent that this is actually the best year in our history. Of the six cases reported, two were paralytic, and of these, one was reported early in January and must have had its inception in 1956. The other was a pregnant woman from another state who arrived in Maine on a Saturday and was stricken with the disease within two days.

Of the four non-paralytic cases, one must be regarded as questionable because of evidence obtained after the case was reported. From a practical standpoint, this

leaves three reported cases of non-paralytic polio among Maine residents in 1957.

Was it worthwhile? Well, as any amateur can guess, there is a lot these figures do not tell. Time, and time alone will give us a meaningful answer. Because medicine has demonstrated its ability to handle this problem in Public Health and Disease Prevention, the polio vaccination programs of the state and federal governments have been allowed to lapse.

In the time available before the next polio season, every M.D. in Maine must make it his personal responsibility to see that all of his patients have been immunized. This is *OUR* responsibility and like certain others, it can be delegated to no other segment of our society.

Paralytic Polio Down 80%: Vaccination Campaign Pushed

Because he feels that Salk vaccine has dramatically demonstrated its effectiveness, Secretary Folsom is urging that renewed efforts be put into the nationwide drive for vaccinations. Early this year the American Medical Association initiated the campaign, which has the support of the State and Territorial Health Officers, the Advertising Council and the National Foundation for Infantile Paralysis, as well as U. S. Public Health Service.

Summarizing progress in the last two years, the Secretary said the incidence of paralytic polio had decreased a spectacular 80%, due largely to use of the vaccine. He cited these statistics: 1,578 paralytic

cases so far this year, contrasted with 7,886 for the comparable period two years ago and 5,241 last year. Total cases (non-paralytic included) also have decreased, from an average of 24,928 over the past five years to 4,851 this year.

"The means to avert the suffering and anguish caused by polio are at hand," Mr. Folsom said, and "it is possible to give paralytic polio a knockout blow within the next year . . . This is the best time for medical societies, local health departments, schools, industries and individual citizens and physicians to make sure that everyone who needs protection gets it. If unvaccinated persons will start now, they can get the full schedule of three doses before the next polio season begins." He noted that more than 37,000,000 Americans under 40 have received no vaccine, and 44,000,000 have had only one or two doses, adding: "It will be a tragedy if, simply because of public apathy, vaccine which might prevent paralysis or even death lies on the shelf unused."

The Secretary recalled that because use of the vaccine had dropped and supplies had piled up in warehouses, production was cut back about a year ago. After AMA started the vaccination campaign early this year, demand rose sharply and by last spring the vaccine again was in short supply and many campaigns were postponed. Now supplies have piled up again, and there is little possibility of their being exhausted. This summary was given of the vaccine production situation: Since April, 1955, when manufacture was first licensed, more than 215,000,000 cc of vaccine released, more than 84,000,000 of it this year; production now is running at about 12,000,000 cc per month and manufacturers will be asked to maintain or increase this rate if the demand is sufficient. Public Health Service comments: "It now appears possible, for the first time, to have enough vaccine available to give protection to substantially all the population under 40 before the start of next year's season of peak incidence."

Antibiotics Symposium Some Notes and Highlights

Penicillin emerges as the villain among antibiotics as a cause of physiologic reactions, in a comprehensive survey whose results were reported last week. Between late 1953 and early 1957, Food & Drug Administration agents probed for cases of antibiotics reactions in all states. They interviewed 1,637 physicians, covered 827 hospitals containing well over one-fourth of the nation's general beds. The roundup produced evidence of 3,419 cases of severe reactions, of which 424 had to be excluded from tabulation because of inadequate details.

Although scores of antibiotics were involved, penicillin figured in 900 of the 1,070 cases so serious as to be classed as life-threatening. Of 809 cases of anaphylactoid shock, 72 resulted in death, all but one coming in wake of intramuscular injections. Other dangerous

reactions, besides anaphylaxis, were 107 superinfections, 70 severe skin reactions, 46 dyscrasias and 38 cases of angioneurotic edema.

Henry Welch, chief of FDA's Division of Antibiotics, presented the report. He observed that study of case histories indicates there has *not* been indiscriminate use of penicillin by physicians. Broad spectrum antibiotics were found to cause relatively fewer reactions. Note: Copies of complete report will be made available to medical profession, FDA officials said.

Don't Let Patients Read Your Professional Journals

"How can a doctor start a malpractice suit against himself? By placing *Medical Economics* or the A.M.A. Journal in his reception room . . ."

This warning appeared recently in the monthly newsletter of Colorado's state medical society. And Lansing Chapman, publisher of *Medical Economics*, quotes it with approval in his magazine's October issue. It's "a point we ourselves have made many times," he comments. There are many reasons why professional journals don't belong in waiting rooms, he notes, and the malpractice articles they contain are one of the most important. He continues:

"Malpractice is the topic that doctors most want to read about, according to our readership surveys. The reason's obvious: In our present claims-conscious era, facts about malpractice are the doctor's best defense. But the best defense can be undermined if you pass these articles along to your patients . . . Certainly such articles don't make appropriate reading for sick people waiting to see you . . ."

"As a controlled-circulation magazine, *Medical Economics* is not available to the general public — except as individual doctors are making it so," Mr. Chapman concludes. "We hope they'll stop."

Doctor Fees Below Other Health Costs

A report in the Monthly Labor Review on medical care costs in the cost of living index notes that in the past 20 years hospital costs have risen sharply in contrast to physicians' fees. The article by a Bureau of Labor Statistics employee lists these increases between 1936 and 1956: hospital room rates, 264.8%; dentists' fees, 82.1%; general practitioners' fees, 72.8%, and surgeons' fees, 59.5%. In the same period, medical care costs generally have lagged behind costs for food, personal care other than medical and clothing.

The report makes this observation: "With the higher level of living attained in 1950, relative expenditures for medical care tended to increase as incomes increased, as is usually true of items considered as 'necessities' in the family budget. The fact that this pattern has begun to appear in the spending of workers' families indicates the high order of importance they place on medical care. . ."



With The Council ~

The organization meeting of the Council of the Maine Medical Association was held at The Samoset in Rockland on June 23, 1957 with all members present, including the newly elected councilors; Carl E. Richards, M.D. of Sanford, for the First District, and James A. MacDougall, M.D., of Rumford, for the Second District.

Allan Woodcock, M.D., of Bangor, was elected Council Chairman for 1957-1958. Daniel F. Hanley, M.D. was elected Executive Director and Editor, and Mrs. Esther M. Kennard was elected Secretary-Treasurer and Business Manager.

At a meeting on June 25, on the final day of the Annual Session, the proposal to poll members again relative to Social Security was discussed. This proposal was presented to the House of Delegates at its Second Meeting and referred by that body to the Council. It was agreed that discussion of this proposal be tabled until the August meeting; in the meantime the members of the Council to give consideration to the form and mode of procedure.

Paul S. Hill, M.D. was appointed to represent the Maine Medical Association on the Multidisciplinary Committee to Study the Nurse Shortage Problems and Their Solutions in Maine. This committee was proposed by the Maine Nurses Association and consists of representatives of organizations in the State who are concerned with the problem.

Dr. Hanley was instructed to obtain from the State of Maine Board of Registration of Medicine statistics regarding applications and licensure.

The 1958 Annual Session was discussed and it was voted to hold this meeting at The Samoset on June 22, 23 and 24.

AUGUST 25, 1957

The August meeting of the Council was held at New Meadows Inn in Bath.

It was agreed that George O. Cummings, Sr., M.D. be asked to write an article in favor of Social Security for publication in a later issue of the Journal, and that someone be asked to submit an article opposing Social

Security. Attention was called to material relative to Social Security which was published in the February 1956 issue of the Journal. (Reprints were sent to each member of the Maine Medical Association on October 10). It was further agreed that the members of the Council discuss this question with physicians in their respective areas and present their findings at the October meeting.

The Council approved a resolution on Orientation in General Practice for Medical Students, which was presented at the request of Sidney R. Branson, M.D., of South Windham, Secretary of the Maine Chapter of the American Academy of General Practice.

A program to register arthritic and rheumatic patients in the State of Maine, as proposed by the Pine Tree Chapter of the American Arthritis and Rheumatism Foundation, was approved. The Maine Pharmaceutical Association, at their annual meeting, voted to let their stores serve as registration centers for this program which is being undertaken this month.

OCTOBER 13, 1957

This meeting was held at the Hotel Elmwood in Waterville on the opening day of the Fall Clinical Session.

It was agreed that the poll of members relative to Social Security be done in February, 1958 — following publication of the articles in the Journal concerning this subject; in December the article by Dr. Cummings favoring Social Security and in January the article opposing this program.

A resolution from the American Medical Association, "that the Traffic Safety Committee of the A.M.A. contact the various state societies, suggesting the establishment of traffic safety committees on a state and local level . . ." was approved. The President of the Maine Medical Association, Dr. Winchenbach, was authorized to appoint a Traffic Safety Committee of the M.M.A. and to write to the county secretaries relative to the appointment of local committees.

Continued on page 419



DEAN H. FISHER, M.D.
COMMISSIONER

State of Maine

Department of Health and Welfare

Immunizations In The First Grade Child In Maine

ELLA LANGER, M.D. AND EDSON K. LABRACK, M.P.H.

The Division of Maternal and Child Health and the Division of Vital Statistics recently completed a study to gather information on the subject of immunizations among children in Maine. The study was designed to provide accurate information on the progress of immunization services for the young school child. The object of the study was to bring the problem into sharp focus in order to ascertain what plans should be made to further immunization programs and services in the State. The lack of objective information on immunization levels formerly made effective planning difficult.

The information was obtained by means of a sampling survey of children enrolled in first grade classes in the State during the school year 1956-1957. The sample was designed so that each child enrolled in a first grade class had an equal probability of selection. The number of children selected for the sample was 1,771, or slightly less than 10 per cent of the total first grade school enrollment in the State.

SUMMARY OF FINDINGS

Analysis of sample results shows the level of immunizations in first grade children to be fairly high. Table I summarizes the information obtained from the sample:

TABLE I. Percentages of first grade children fully or partially immunized against selected acute communicable diseases: Maine 1957.

<i>Disease</i>	<i>Per cent immunized</i>
Diphtheria	78.2
Whooping Cough	77.8
Tetanus	77.0
Smallpox	82.2
Polio	86.3*

DIPHTHERIA, WHOOPING COUGH, AND TETANUS

The overall figures for immunizations against diph-

theria, whooping cough, and tetanus, whether immunization was given separately for one or more of the diseases or jointly with DPT antigen, are shown in Table I. These figures include only those children receiving the full course of treatment where DPT antigen was used. Less than 0.5 per cent of the children in the sample discontinued the course of DPT antigen after having had only one or two shots. Allergic reaction was commonly stated as the reason for discontinuing treatment in these cases.

The sample estimate of children receiving the full course of DPT injections was 74.9 per cent. Analysis of the sample indicates that at 95 per cent confidence level the true percentage of DPT immunized children in first grades in Maine will not be smaller than 67.6 per cent nor greater than 82.2 per cent.

Children receiving separate immunizations against diphtheria, whooping cough, or tetanus represented only 4.0 per cent of the total. Children receiving separate immunizations for each of the three diseases represented only 1.0 per cent of the total.

Table 2 shows the status of immunization against these three diseases for first grade children in the state:

TABLE 2. Percentages of first grade children immunized against diphtheria, whooping cough, and tetanus, by manner immunized: Maine, 1957.

<i>Immunization</i>	<i>Per cent immunized</i>
DPT antigen	74.9
Diphtheria	3.2
Whooping Cough	2.9
Tetanus	2.1
Status unknown	2.5

SMALLPOX

The level of immunization against smallpox was found to be 82.2 per cent in the sample. Analysis of the sample indicates that at the 95 per cent confidence level, the true percentage of first grade children in the state who have received smallpox vaccinations will not be smaller than 71.8 per cent nor greater than 92.6

*Includes all children receiving one or more injections of Salk vaccine.

per cent. Smallpox vaccination status could not be ascertained for 2.4 per cent of the children in the sample.

POLIO

The level of immunization against polio was found to be 77.4 per cent in the sample. This figure represents only those children who had received the full course of three injections of Salk vaccine. Analysis of the sample indicates that at the 95 per cent confidence level the true percentage of first grade children in the state who have received three injections of Salk vaccine is not smaller than 67.5 nor greater than 87.3.

In addition to the 77.4 per cent who had had the full course or three injections, 8.1 per cent had had two injections and 0.8 per cent had had one injection. Table 3 shows a cumulative distribution of children by number of injections:

TABLE 3. Percentages of children receiving one or more polio injections accumulated by number of injections received: Maine, 1957.

<i>Injections</i>	<i>Per cent</i>	<i>Cumulative per cent</i>
3	77.4	77.4
2	8.1	85.5
1	0.8	86.3
Status unknown	1.6	—

CONCLUSIONS

The study reflects a high level of immunizations in the five to six year old child in Maine as indicated by percentages of first grade children immunized against

the acute communicable diseases under observation. Much credit is due practicing physicians, child health conference and immunization clinic personnel, for the excellent performance reflected in the study results.

Although the immunization picture is good statewide, it should occasion no relaxation of effort. There is still room for improvement. With the availability of private physicians, child health conferences and immunization clinics and the opportunities these offer for basic immunization of all children, the level of immunization can approach 100 per cent. This can be accomplished through concerted effort in educating parents as to the value of immunizations generally, and through private physicians emphasizing immunizations in their practice.

Further, the value of early immunization should be strongly emphasized. A recent unpublished departmental study showed immunization levels found among one-year-olds to be substantially lower than levels found among the five- and six-year olds included in the present study. The earlier study, which was completed late in 1956, showed the DPT level to be 63.4 per cent, the polio level to be 36.1 per cent, and the smallpox level to be 23.1 per cent in one-year-olds. This appears to indicate that a sizable number of children are immunized after the first year of life.

It is clearly indicated, then, that educational efforts as to the value of immunizations be continued and expanded, and that special stress be placed on beginning immunizations as early as the second month of life if possible.

FROM THE SECRETARY'S NOTEBOOK — *Continued from page 417*

Dr. Winchenbach was also instructed to appoint a delegate and alternate to represent the M.M.A. at future meetings of the Maine Health Council.

Dr. Winchenbach announced the appointment of the following members to represent the M.M.A. on a joint committee, consisting of three members from each of the following: Maine Medical Association, Maine Hospital Association and Maine Nurses Association.

- Lawrence M. Cutler, M.D., Bangor
- Laban W. Leiter, M.D., Portland
- James A. MacDougall, M.D., Rumford

The purpose of this committee is "to study matters pertaining to patient care; means of achieving through mutual understanding and cooperation, the best possible program of patient care; and to consider other such matters of interest to the three associations."

Paul S. Hill, Jr., M.D., of Saco, presented a detailed report of a recent meeting of the Multidisciplinary

Committee. This report will be published in a later issue of the Journal.

It was voted that Dr. Paul S. Hill, Jr., and the three members on the "Joint committee" listed above, act as a committee to formulate a policy concerning the nursing situation and bring it back to the Council for further action an discussion; Dr. Hill to act as chairman of this committee.

Meetings of the Council for the balance of the 1957-1958 period will be held on the following dates — December 8 at Brunswick; February 9 at Brunswick; and March 30, on which date the Council will meet at 10:00 A.M., followed by luncheon at 12:30 P.M., and the Interim Meeting of the House of Delegates at 2:00 P.M.; these meetings to be held in Brunswick. The final meeting of the Council for this period will be held Saturday evening, June 21, 1958, preceding the Annual Session.

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Secretary, C. W. Kinghorn, M.D., Portsmouth, N. H.

County Society Notes

KENNEBEC

September 19, 1957

The September meeting of the Kennebec County Medical Society was held at the Augusta House, Augusta, Maine.

A program on Urology was presented by the following members: Paul D. Giddings, M.D. of Augusta; Meyer Emanuel, M.D. of Togus; Earl M. Davis, M.D. and Joseph A. Marshall, M.D. of Waterville.

LINCOLN-SAGADAHOC

September 17, 1957

A film on "Active Management of Disability in the Aged," was presented at the September meeting of the Lincoln-Sagadahoc County Medical Society. The program for this meeting, which was held at The Ledges in Wiscasset, also included a brief business meeting.

WASHINGTON

October 11, 1957

The annual meeting of the Washington County Medical Society was held on Friday, October 11, 1957 at the Congregational Vestry, East Machias, Maine, with twelve members and guests present. An excellent lobster dinner was served by members of the Ladies' Society.

Thomas H. Palmer, Jr., M.D., of Bangor, the guest speaker was introduced by Hazen C. Mitchell, M.D., of Calais, President of the society. Dr. Palmer spoke on Arterial Reconstructive Surgery, a subject that has probably intrigued surgeons for generations. This type of surgery has been in use only since World War II and was in great use during the Korean conflict. In Bangor, where the work has been limited to peripheral surgery, there has been a high percentage of success. There was much interest in Dr. Palmer's talk, particularly since this type of surgery offers help for many who would otherwise be cripples.

Officers elected for the ensuing year are as follows:

President — Robert G. MacBride, M.D., Lubec
Vice-President — Harold G. Sears, M.D., Woodland
Secretary-Treasurer — Karl V. Larson, M.D., East Machias
Delegate to Maine Medical Association — Perley J. Mundle, M.D., Calais. Alternate — James C. Bates, M.D., Eastport

Board of Censors for three years — John F. Hanson, M.D., Machias

Member of Health Insurance Committee — Hazen C. Mitchell, M.D., Calais

KARL V. LARSON, M.D.
Secretary

YORK

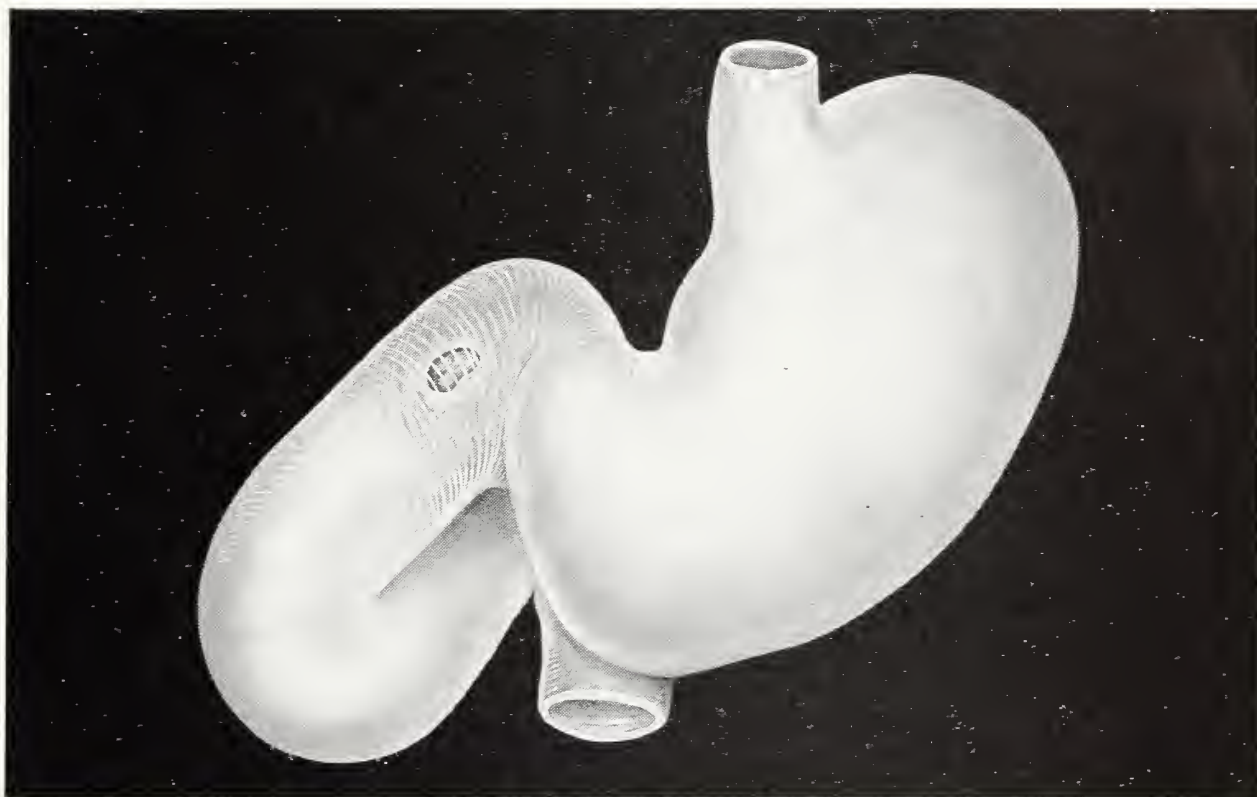
October 9, 1957

The October meeting of the York County Medical Society was held at Howard Johnson's Restaurant in Kennebunk, Maine.

Richard F. Boyd, M.D., of New York City, Regional Director, U. S. Public Health Service, was the guest speaker. Dr. Boyd's subject was, "Public Health And The Private Physician."

At the business meeting, it was voted to approve the program on instruction in Tuberculosis Nursing, which is sponsored by the York County Tuberculosis and Health Association. It was also voted that the county meeting usually held in November be permanently discontinued. Dana B. Mayo, M.D., was elected to membership in the society.

Continued on page 422

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*Lichstein, J.; Morehouse, M. G., and Osmon, K. L.: Pro-Banthine in the Treatment of Peptic Ulcer. A Clinical Evaluation with Gastric Secretory, Motility and Gastroscopic Studies. Report of 60 Cases, Am. J. M. Sc. 232:156 (Aug.) 1956.

SEARLE

The following members were present: Drs. M. Bacon, F. W. Barden, L. R. Charest, S. A. Cobb, K. J. Cuneo, R. E. Endicott, R. F. Ficker, A. A. Hoffman, P. B. Jacobson, C. W. Kinghorn, J. R. Larochelle, H. Lapirow, J. H. Macdonald, A. W. Magocsi, W. F. Mahaney, M. A. K. Moulton, D. B. Mayo, R. L. Whitney, C. E. Richards, M. Ross, R. D. Vachon and M. D. Ouellette.

Annual Meeting

The annual meeting of the York County Society will be held at the Kennebunk Inn, Kennebunk, Maine on Wednesday, January 8, 1958.

Committee on Arrangements for this meeting are James H. Macdonald, M.D., Kenneth J. Cuneo, M.D. and J. Robert Downing, M.D.

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Donald H. Brown, M.D.
From — Maine General Hospital, Portland
To — 12902 Dewey Street, Los Angeles 66, California

Announcements

Cruise Congress Of Hemisphere Ophthalmologists

The Pan American Association of Ophthalmology, an 18-year-old organization with some 2,000 members representing all the countries of the Western Hemisphere, will hold its second Cruise Congress, February 1-14, 1958 on board the S. S. Queen of Bermuda. The itinerary includes a day each in San Juan, Puerto Rico; Ciudad Trujillo, Dominican Republic; Kingston, Jamaica; Port-au-Prince, Haiti, and Nassau, Bahama Islands.

Meetings will be held on shipboard and also in port cities with local societies of ophthalmologists. There will be opportunities to visit hospitals and to meet the staffs of medical schools in the islands.

For complete information, write to William L. Benedict, M.D., Rochester, Minnesota, chairman of the organizing com-

mittee or Mr. Leon V. Arnold, 33 Washington Square West, New York 11, who is in charge of arrangements. All reservations must be made through Mr. Arnold.


Maine Heart Association

The Maine Heart Association has appropriated \$40,000 for basic research into the causes of heart ailments, according to a recent announcement by Ralf Martin, M.D., President of the MHA.


The project at the Maine Medical Center, which is conducted by Clifford V. Nelson, M.D., is recognized as one of the outstanding programs of its kind outside a medical college.

Mr. Frederick P. O'Connell, Executive Director of MHA, states that public and professional education and community service will continue as in the past.


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American Board Of Obstetrics And Gynecology

The Part I Examination of the American Board of Obstetrics and Gynecology, is to be held in various parts of the United States and Canada, on Thursday, January 2, 1958, at 2:00 P.M.

Candidates notified of their eligibility to participate in Part I must submit their case abstracts within thirty days of notification of eligibility. No candidate may take the Written Examination unless the case abstracts have been received in the office of the Secretary.

Current Bulletins outlining present requirements may be obtained by writing to Robert L. Faulkner, M.D., Secretary, American Board of Obstetrics and Gynecology, 2105 Adelbert Road, Cleveland 6, Ohio.

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November 6	Lecture — "Storage Diseases"	10:45 A.M.
November 13	Lecture — "Erythroblastosis"	10:45 A.M.
November 20	Lecture — "Accidents"	10:45 A.M.
November 21	Clinical Pathological Conference — Death Review and Microscopic Demonstration	11:00 A.M.
November 27	Lecture — "Birth Trauma. Pre- maturity, Twin Deliveries"	10:45 A.M.

Cervical Arthritis — Continued from page 413

- 9. Semmes, R. F., and Murphey, F.: The Syndrome of Unilateral Rupture of the Sixth Cervical Intervertebral Disc with Compression of the Seventh Cervical Nerve Root. A Report of Four Cases with Symptoms Simulating Coronary Disease. *J.A.M.A.* 121: 1209-1214, 1943.
- 10. Spurling, R. G.: Lesions of the Cervical Intervertebral Disc. Springfield, Ill. *C. C. Thomas*. IX: 134, 1956.

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Tuberculosis Abstract

Ventilatory studies were performed before and after strapping one hemithorax. Vital capacity and maximum breathing capacity decreased 8 per cent and 11 per cent respectively. There was no significant change in diaphragmatic motion and bronchspirometric studies demonstrated only a small decrease in ventilation on the taped side. "There appears no basis for the belief that tape applied to one hemithorax in expiration will specifically encourage pneumonia and atelectasis in the underlying lung."

Carton, Robert W.; Sepp, Endel *On Taping the Chest:*
American Review of Tuberculosis and Pulmonary Disease:
76:167-172: 1957

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JAMES A. MACDOUGALL, M.D., Rumford	Second District; Androscoggin, Franklin, Oxford	1960
ROBERT L. ALLEN, M.D., Rockland	Third District; Knox, Lincoln-Sagadahoc	1959
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ALLAN WOODCOCK, M.D., Bangor	Sixth District; Aroostook, Penobscot Piscataquis	1958
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References: (1) Gelvin, E. P.; McGovock, T. H., and Kenigsberg, S.: *Am. J. Digest. Dis.* 1:155, 1956. (2) Holt, J. O. S., Jr.: *Dollos M. J.* 42:497, 1956. (3) Notenshon, A. L.: *Am. Pract. & Digest Treat.* 7:1456, 1956. (4) Council on Pharmacy and Chemistry, *New and Nonofficial Remedies: J.A.M.A.* 163:356 (Feb. 2) 1957.

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The Journal of the Maine Medical Association

Volume Forty-Eight

Brunswick, Maine, December, 1957

Number 12

Responsibilities Of Medical Examiners*

RICHARD C. WADSWORTH, M.D.**

... his responsibilities may be divided into two main categories, viz., his legal responsibilities which are clearly defined by law and his moral responsibilities which, although they are of equal importance, are much harder to define.

The Medical Examiner System was adopted in Maine in 1909 for the purpose of providing a medico-legal investigation of certain deaths occurring in the State. At that time the law provided for the Medical Examiner to perform autopsies in the presence of the coroner. Although the Public Laws of 1917 provided that the Medical Examiner should investigate deaths by unlawful act such as murder, manslaughter and hunting deaths, it was not until 1929 that the office of coroner was abolished.

Since 1930 there have been various amendments to the Public Laws of Maine which have changed or clarified the duties of the Medical Examiner. Extensive revision of the Public Laws in 1955 have broadened the scope of the Medical Examiner's responsibilities. This paper is an attempt to bring together in a single manuscript the many responsibilities which are his because of the many interests which are to be served and because of the variety of people with whom he must necessarily come in contact.

In general his responsibilities may be divided into two main categories, viz., his legal responsibilities which are clearly defined by law and his moral responsibilities which, although they are of equal importance, are much harder to define.

The Medical Examiner has responsibilities to many individuals and groups. He is responsible to the Governor of the State by whom he is appointed; to the Attorney General to whom he must submit reports of his investigations; and to the County Attorney to whom he also submits reports and with whom he must work closely and understandingly if their joint investigations are to be effective. He has responsibilities to the various law-enforcing agencies such as the state police, the sheriff's department and the local police department. He has a definite responsibility to the State Department of Health and the National Office of Vital Statistics of the United States Public Health Service. A responsibility frequently not emphasized is that to the profession which he represents. He must not forget that he has a great responsibility to the deceased, to the family of the deceased and to the community which the examiner serves.

TYPES OF DEATH INVESTIGATED

The types of death which must be investigated by a Medical Examiner are clearly defined by law (Chapter 89, Section 244, as amended, Public Laws of 1955). They may be divided into four categories:

1. Any death which appears to have been due to violence, including homicide, suicide and sudden accidental death of any nature, including those due to the action of chemical, thermal or electrical agents.
2. Any death which occurs after an induced abortion, whether induced for medical, legal or other reason.
3. Any sudden and unexpected death including ap-

*Delivered before the Maine Medico-Legal Society on June 25, 1957.

**Director of Laboratories, Eastern Maine General Hospital, Bangor.

parently instantaneous deaths without obvious cause, deaths during or following an unexplained syncope or coma and deaths during an acute or unexplained rapidly fatal illness.

4. Any death where the person dying did not have the attendance of a physician during his last illness.

When notified of the finding of a dead body (Chapter 89, Section 245) that appears to fall into one of these four categories the Medical Examiner "shall forthwith repair to the place where such body lies and take charge of the same, and before said body is removed, he shall reduce, or cause to be reduced, in writing, a description of the location and position of the body and any and all facts that may be deemed important in determining the cause of death."

PROVISIONS FOR REMOVAL OF BODY

There are provisions for removal of the body before the arrival of the Medical Examiner when certain conditions exist (Chapter 89, Section 244). "If the body, where found, is in danger of being destroyed or damaged by fire, vehicular traffic or otherwise, or of being lost in any body of water, any person may take steps as may seem necessary for its preservation or retention prior to the arrival of the Medical Examiner, sheriff, a member of the state police, or the county attorney, but in such event shall first, whenever practicable, exactly mark the location and position of the body."

If no such danger exists, however, the law specifies that the body shall not be moved until the arrival of the Medical Examiner, the sheriff, a member of the state police or the county attorney and UNTIL PHOTOGRAPHS HAVE BEEN TAKEN OR MEASUREMENTS AND DRAWINGS HAVE BEEN MADE TO RECORD THE PHYSICAL FACTS RELATIVE TO THE POSITION AND LOCATION OF THE BODY under the supervision of the county attorney, the state police or sheriff or unless the attorney general or the county attorney waives such requirements. After such photographs or such measurements and drawings have been made or have been waived as aforesaid, and after the Medical Examiner has completed such examination as required of him, the body may be removed to a convenient place.

It might be pertinent to dwell for one moment on the wording of Section 245, Chapter 89, as amended, Public Laws of 1955, referring to the response of the Medical Examiner when notified of a finding of a body. The law says "such Medical Examiner shall forthwith repair to the place where the body lies." Perhaps some of us have not thought much about the significance of the word "forthwith." According to Webster this means "immediately; without delay; hence within a reasonable time; promptly and with reasonable dispatch." There is obviously a reason for inserting this word in the law. The greater the delay in arriving at the scene the more likely is there an opportunity for the scene to change, and hence the less likely that

Standard equipment for a Medical Examiner should be a notebook, a pen or pencil, a tape measure, a camera, a searching pair of eyes and a moderate degree of suspicion.

an accurate description of the scene can be recorded or accurate appraisal of the situation made. The other investigators should not unnecessarily be held waiting for the arrival of the Medical Examiner.

The chief responsibility of the Medical Examiner is to determine the cause of death. Questioning of the family and of witnesses will frequently give the Medical Examiner clues as to the probable cause of death. It is important, however, to consider other possible causes or contributing factors when interviewing witnesses and when examining the body and the environment in which it is found. It may be necessary, at a later date, to be able to rule out various possible causes of death, in order to successfully prosecute an accused person. Standard equipment for a Medical Examiner should be a notebook, a pen or pencil, a tape measure, a camera, a searching pair of eyes and a moderate degree of suspicion. It should not be necessary to add that a body examined at the scene, under poor conditions of light and accessibility, should be re-examined later under more suitable conditions such as at an undertaker's parlor, the morgue or other convenient place.

MEDICO-LEGAL AUTOPSY

When there still remains a reasonable doubt as to the cause of death or when there is suspicion of homicide, suicide, abortion or death by chemical, thermal or electrical agents, a medico-legal autopsy should be performed. Authorization for such an examination must, of course, come from the county attorney or the attorney general. (Chapter 89, Section 245).

When an autopsy has been approved, it is important to remember that the purpose of such an examination is not only to determine the cause of death, but also to gain as much information as possible to determine the manner and time of death, and, as far as possible, to rule out all other probable causes or contributing factors to the death. Partial autopsies will not accomplish this purpose. As in other fields of medicine, the physician should not hesitate to request the aid of a consultant when his conscience tells him this is desirable for the best interests of the state. (Chapter 89; Section 248).

It should be recalled that the law provides that the autopsy shall be made in the presence of a physician and one other discreet person sufficient in his judgment to disclose such facts as may be attainable thereby which may be of assistance in determining the cause of death. (Chapter 89; Section 245).

IMPORTANCE OF IDENTIFICATION

The importance of identification of the dead body cannot be over-stressed. Although not required by law, it is of considerable importance to have a signed statement of identification by a relative or friend of the deceased. When there is any doubt about the identification of the body it is most desirable to have photographs, finger-prints and an accurate description of the body, including scars, tattoos, and dental status.

There are other duties which are prescribed for the Medical Examiner. He is responsible for all articles of value which are found on or near the body of the deceased. Furthermore, it is his duty to see that such articles of value are delivered to the person or persons who are legally entitled to receive them. (Chapter 89, Section 251). This, at times, may create an almost insurmountable problem. When a few dollars are found in a bill-fold and these are turned over by the Medical Examiner to the wife of the deceased there is little opportunity for repercussion. However, when two thousand dollars are found in the pockets of the deceased or sewn into the mattress on which the deceased is lying, the Medical Examiner is burdened with a distinct responsibility. If he is cautious he will find out a few things about the survivors before he turns over this money to any one member of the family. If there is any doubt to whom such valuables should be delivered, the fact should be made known to the judge of probate for the county, whose directions in the case shall be followed. Regardless of the circumstances, the Medical Examiner should insist upon a written receipt from the recipient of the valuables. The Medical Examiner can conceivably be held legally responsible if the valuables get into the wrong hands.

It is the law that any body to be cremated in this state must have a certificate of approval by a Medical Examiner. The obvious reason for such a law is to prevent the destruction of evidence of homicide. Before signing a certificate for cremation the Medical Examiner should contact the physician who treated the patient in order to secure information regarding the cause of death and should carefully examine the body of the deceased for evidence of trauma. Bullet wounds have been overlooked in a cursory examination.

RESPONSIBILITY TO THE DECEASED

The Medical Examiner has a distinct responsibility to the deceased. We have frequently heard that dead men cannot speak. Literally this statement is true. Figuratively it is false. Many things can be observed on the body or clothing of the individual or in the immediate environment that can tell us more than we could gather from the deceased if he were able to converse with us. Accurate observation may help us to identify the weapon or type of weapon with which he was struck. Examination of the finger nails may lead to positive identification of the assailant. It is the duty of the Medical Examiner to protect the interests

**An error by the Medical Examiner
may place the life of an innocent person
in jeopardy, especially when death from
natural causes is misinterpreted
as being death from homicide.**

of the deceased, no matter how humble the conditions in which the body is found. Inaccurate observation or faulty interpretation may deprive the widow and family of accident insurance for which the deceased may have paid at great sacrifice to himself. An error by the Medical Examiner may place the life of an innocent person in jeopardy, especially when death from natural causes is misinterpreted as being death from homicide.

In this connection it is necessary for the Medical Examiner to frequently remind himself that he is seeking the truth. He must separate facts from surmises and observations from conclusions. It is possible for a person in this position to acquire an attitude that he must convict somebody for a crime which has been committed. This attitude is apt to reach its peak of development when the Medical Examiner appears on the witness stand either before the Grand Jury or at the trial of an accused person. One Medical Examiner once boasted, in our presence, that he had never "lost a case." The attitude expressed by this statement has frequently caused us to reflect and even to shudder at the implications. This attitude is one which should make all of us reflect upon our obligations and also upon our limitations when we are called upon to give expert testimony in court. We would do well to remember that the jury is there to make the decision whether the accused is innocent or guilty. The medical witness is there to give the facts which were found, and his interpretation of the part they played in causing the death of the individual. He should be honest with himself in the presentation of these facts and the interpretation of them.

ROLE OF MEDICAL WITNESS

This concept of the role of a medical witness is not a new one. It is expressed in the Justinian Code enacted between 529 and 564 A.D. and preserved as one of the greatest contributions of Roman Law. In this code appears the statement: "*Medici non sunt proprie testes, sed maius est iudicium quam testimonium*" which may be freely translated to mean that "the medical expert is not used to proper or greatest advantage if he is regarded simply as an ordinary witness, appearing *for* one side or *for* the other side; his function is rather to assist the judiciary by impartial interpretation and opinion, based on his specialized knowledge. This dictum holds true today and should *never* be forgotten."⁽¹⁾

In regard to the records of the Medical Examiner

there is little to be said. Notes, sketches and pictures taken at the scene of the viewing can be of great value in the filing of a complete and accurate report. Clear, concise wording is preferable to a lengthy report. Copies of the report should be sent to the county attorney and to the attorney general as soon as practicable. There may be necessary delays awaiting reports of chemical examinations, microscopic examinations of tissues or identification of blood samples. There should be no undue delay after these tests are reported.

There should be no conflict between the Medical Examiner and the county attorney or members of the law-enforcement agencies. The law clearly says that the Medical Examiner shall take charge of the body when he arrives at the scene. This does not mean that he should do anything to interfere with the collection of evidence by the county attorney, sheriff or police. Neither should they interfere with collection of evidence needed by the Medical Examiner. It should be remembered that this is a collaborative effort to secure all the available facts which may be used at someone's trial. Since the county attorney is to be the prosecutor, all concerned should respect his decisions concerning the way in which investigations are to be carried out. It is extremely important that nothing at the scene be moved, unless absolutely necessary, until the entire team agrees that the necessary notes, sketches, photographs, etc., have been made.

All of the cases which the Medical Examiner investigates will not come to trial. However, in each case he must not only make a report to the county attorney and to the attorney general but he must also be responsible for signing the death certificate. Items 19 through 23a should be filled out with extreme care by the examiner. Accurate mortality data can be obtained only from the facts reported by the physician. He should therefore feel that it is an obligation to his community and to his profession to report the causes of death to the best of his knowledge and belief.

The Medical Examiner is appointed by the Governor to hold public office in a community. He has an obligation to that community to carry out his duties to the best of his ability. He should so discharge his duties that he has the respect of the people whom he serves. He should perform his task with as little disturbance as possible, trying not to offend those with whom he must come in contact, but being firm in regard to carrying out his investigation in such a manner that his mission will be accomplished.

PUBLIC LAWS OF THE STATE OF MAINE

The pertinent Public Laws of the State of Maine, as revised by the 1955 and 1957 statutes, follow:

Chapter 25, Section 382, as amended: "A physician who has attended a person during his last illness shall within 24 hours after the death of said person make a certificate stating, to the best of his knowledge and belief, the name of the deceased, his age, the disease of which he died and the date

of his death and shall either deliver it to the person superintending the burial or leave it with the family of the deceased or at the said physician's office where it may be obtained when called for; and whenever any deceased person did not have the attendance of a physician in his or her last sickness, the person in whose house the said death occurred, or the nearest relative of the deceased shall upon finding the body immediately call a medical examiner to view the body and give to him all the information concerning said death. Upon receiving this information aforesaid the medical examiner called shall make a certificate setting forth the data he has obtained from said persons, and to the best of his knowledge and belief the cause of death. After having made the certificate as aforesaid he shall then deliver same to the funeral director in charge of the burial, or leave it with the family of the deceased where it may be obtained when called for. Any person who wilfully makes a false return or wilfully gives false information to be used in preparing a record of death shall be punished as provided in section 401."

Chapter 89, Section 243, as amended: "Medical examiners for each county in the state shall be appointed by the governor with the advice and consent of the council for a term of 4 years or during the pleasure of the governor and council. They shall be able and discreet men, learned in the science of medicine and anatomy, and bona fide residents of the county for which they are appointed. The number of medical examiners to be appointed shall be as follows: for the counties of Franklin, Knox, Lincoln, Piscataquis, Sagadahoc, Somerset and Waldo, 2 each; for the counties of Hancock, Oxford and Washington, 3 each; for the counties of Kennebec and York, 4 each; for the counties of Androscoggin and Aroostook, 5 each; for the county of Cumberland, 6, and for the county of Penobscot, 7; and they shall be appointed with reference to territorial distribution. Each medical examiner before entering upon the duties of his office shall be duly sworn to the faithful performance of his duty. They shall make examinations, as hereinafter provided, whenever any person shall die from criminal violence, or by suicide or in any suspicious or unusual manner."

Chapter 89, Section 244, as amended: "Whoever finds the body of any person who is supposed to have come to his death by violence or by the action of chemical, thermal or electrical agents or following abortion, or suddenly when not disabled by recognizable disease or who has come to his death unexplained or unattended, shall immediately notify one of the municipal officers, a police officer or constable if in a city or town; or a member of the board of assessors if in a plantation; and if in an unorganized place, the most readily accessible of such officials in any city, town or plantation within the county. Such official shall immediately take charge of such body and retain custody thereof without moving the same, except as hereinafter provided, until the arrival of a medical examiner, the county attorney, the sheriff or a member of the state police. The official taking charge of said body shall immediately notify the county attorney or sheriff, who shall in turn arrange for the attendance of the most readily accessible medical examiner. If the body, where found, is in danger of being destroyed or damaged by fire, vehicular traffic or otherwise, or of being lost in any body of water, any person may take steps as may seem necessary for its preservation or retention prior to the arrival of the medical examiner, sheriff, a member of the state police or the county attorney, but in such event shall first, whenever practicable, exactly mark the location and position of the body. If no such danger exists, the body shall not be moved until the arrival of the medical examiner, the sheriff, a member of the state police or the county attorney, and until photographs have been taken or measurements and drawings have been made to record the physical facts relative to the location and position of the body,

under the supervision of the county attorney, the state police or sheriff, or unless the Attorney General or the county attorney waives such requirements. After such photographs or such measurements and drawings have been made or have been waived as aforesaid and after the medical examiner has completed such examination as required of him in the following section, the body may be removed to a convenient place. The body shall not be finally released for embalming or burial, except by order of the county attorney or sheriff. If and when it shall appear to the county attorney that the case is one of probable homicide, he shall notify the Attorney General of the fact."

Chapter 89, Section 245, as amended: "Upon notice that there has been found or is lying within his county the body of a person who is supposed to have come to his death by violence or by the action of chemical, thermal or electrical agents or following abortion, or suddenly when not disabled by recognizable disease, or any unexplained or unattended deaths, it shall be the duty of any person having knowledge of such death to notify the medical examiner of the county wherein the body lies and such medical examiner shall forthwith repair to the place where such body lies and take charge of the same, and before said body is removed, he shall reduce or cause to be reduced to writing a description of the location and position of the body and any and all facts that may be deemed important in determining the cause of death. He shall, upon authorization of the county attorney or the Attorney General, make an autopsy in the presence of a physician and one other discreet person sufficient in his judgment to disclose such facts as may be attainable thereby which may be of assistance in determining the cause of death. He may compel the assistance of such physician and person, by subpoena if necessary, and he shall then and there at the time of such autopsy reduce or cause to be reduced to writing every fact and circumstance disclosed by such autopsy tending to show the manner and cause of death, which record shall be signed by himself and the witnesses who have attended, who shall in addition to their names subscribe their address and place of business. In case at the time of finding of such body there be no medical examiner available within the county by reason of vacancy in the office, incapacity or absence from the county, any medical examiner in an adjoining county may be notified, whose duty it shall be to attend and perform all duties prescribed by sections 243 to 253, inclusive, as though he were a medical examiner within the county."

Chapter 89, Section 246: "Immediately after such view with personal inquiry or autopsy as is required by the preceding section, the medical examiner shall file with the county attorney of the county in which the body is found and with the Attorney General a duly attested copy of the record of the case. He shall also make a return of the death of such person to the city or town clerk as required by law, which shall be supplemented with a personal description of the deceased for identification."

Chapter 89, Section 247: "The county attorney or Attorney General may require the medical examiner to perform an autopsy if in their judgment the same is advisable, in cases where the medical examiner has not deemed it necessary to do so, and on receiving from a medical examiner the report of an autopsy made by him in pursuance of the provisions of sections 243 to 253, inclusive, and finding some person or persons probably implicated, may, when deemed necessary, authorize the medical examiner to take an inquest upon the view of the dead body of the person whose death is supposed to have been occasioned unlawfully; such medical examiner shall thereupon summon to appear before him such witnesses as the county attorney or Attorney General may direct, who shall be examined under oath by said county attorney or

Attorney General. All such testimony shall be reduced to writing by the medical examiner or under his direction and shall be signed by the witness and sworn to. The medical examiner shall preside at such inquest and shall report in writing his conclusions, when and where and by what means the person came to his death, to the county attorney or Attorney General, and if it appears to him that it was a case of homicide, he shall so state and may state the name of the person who, in his judgment there is probable cause to believe, contributed to such death, if known to him. The county attorney and the Attorney General shall then proceed to execute the laws of the state governing the offices which they hold and may direct the holding of witnesses as they shall deem necessary."

Section 248: "If a medical examiner reports that a death was not caused by criminal violence, or by suicide or in any suspicious or unusual manner and the county attorney or Attorney General is of a contrary opinion, nothing in sections 243 to 253, inclusive, shall be construed to prevent either of these officers directing an inquest in accordance with the provisions of these said sections."

Section 249: "The medical examiner, with the advice and consent of the county attorney or Attorney General may, if he deems necessary, call a chemist or other expert to aid in the examination of the body or of substance supposed to have caused or contributed to the death of such person, and such chemist or other expert shall be entitled to such compensation for his services as the medical examiner and the county attorney shall certify to be just and reasonable. Any person employed to reduce to writing the results of any of the proceedings provided for in sections 243 to 253, inclusive, shall be sworn and shall be allowed reasonable compensation."

Section 250: "The medical examiner upon the completion of his examination, autopsy or inquest shall deliver the dead body upon their claim therefor to one or more of the persons hereinafter named, and they shall be entitled thereto as follows: 1st, the husband or wife as the case may be; 2nd, the next of kin; 3rd, any friend of the deceased. If the dead body is unidentified or is unclaimed for a period of not less than 48 hours following the view thereof, the medical examiner shall deliver the body to the overseers of the poor in the town, or if in a plantation or unorganized place, to the county commissioners, who shall decently bury the same or shall deliver it to the board of distribution as provided in section 12 of chapter 66. The expense of burial shall be borne by the municipality liable for the support of the deceased, if any within the state, and if not, by the state."

Section 251: Personal effects. "In all cases arising under the provisions of sections 243 to 253, inclusive, the medical examiner shall take charge of any money or any other personal effects of the deceased found upon or near the body and, subject to the right of the state to use the same as evidence, shall deliver them to the person or persons entitled thereto, or if there is any doubt regarding to whom they shall be delivered, this fact shall be made known to the judge of probate for the county, whose directions in the case shall be followed."

Section 252: Compensation of medical examiner. "Every medical examiner shall render an account of the expenses of each case, including his fees, to the county attorney, who shall audit and approve the same before it is submitted to the county commissioners for their approval, and the fees allowed the medical examiner shall not exceed the following, viz.: for a view and inquiry without an autopsy, \$15; for a view and autopsy, \$50; when the medical examiner performing an autopsy is a pathologist, \$100, whether he makes a view or

not; for an inquest, \$10 per day for the time actually spent in holding such inquest and for all necessary travel at the rate of 10¢ per mile. Witnesses summoned to testify at such inquest shall be allowed the same fees as witnesses in the superior court. The physician and other person required to be present at an autopsy as provided in section 245 shall be allowed a reasonable compensation, to be audited by the medical examiner and county attorney." (Amended 5-29-57).

Section 253: Record books and blanks. "The Attorney General and Secretary of State shall prepare for the use of medical examiners forms of record books, blank returns and other papers necessary to carry out the provisions of sections 243 to 253, inclusive; they shall be printed at the expense of the state and distributed to the several medical examiners who shall take care of the same, each entering thereon all the work and reports of his office, keeping the books open for the inspection of the county attorney and Attorney General. Whenever a medical examiner resigns or ceases to hold office, all books and papers pertaining to the office shall be delivered to his successor."

Chapter 25, Section 204, as repealed and replaced: Violent or sudden deaths, embalming fluids not injected until cause of death legally determined. "No person shall inject into any cavity or artery of the body of any person who has died from violence, by the action of chemical, thermal or electrical agents, or following abortion, or suddenly when not disabled

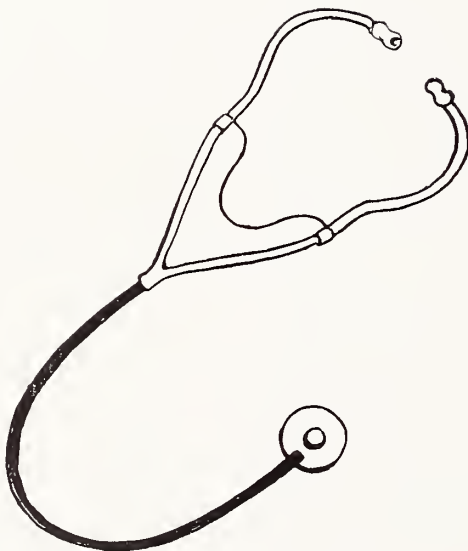
by recognizable disease, any fluid or substance, until a legal certificate as to the cause of death from the medical examiner has been obtained, or until legal investigation has determined the cause of death, or written permission to embalm such body has been given by the medical examiner. If a criminal cause of death is alleged or suspected, no fluid or other substance shall be injected into a body until the cause of death is legally established or until an autopsy has been performed."

Chapter 22, Section 376 (as amended): "The body of a deceased person shall not be cremated within 48 hours after his decease unless he died of a contagious or infectious disease and in no event shall the body of a deceased person be cremated until the person, firm or corporation in charge of the cremation has received a certificate from a duly appointed medical examiner that he has made personal inquiry into the cause and manner of death and is satisfied that no further examination or judicial inquiry concerning the same is necessary. Such certificate shall be retained by the person, firm or corporation in charge of the cremation for a period of three years. For said certificate the medical examiner shall receive a fee of \$5 payable by the person requesting same."

REFERENCES

1. Smith, Sir Sydney, The History and Development of Legal Medicine, C. V. Mosby Co., 1954.

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Early Coverage In Third Degree Burns With Reference To The Use Of Placental Membranes

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It is in the treatment of burns involving from twenty to sixty per cent of the body where the greatest advances have been made in recent years.

Patients with burns involving over sixty per cent of the body surface still die; those with burns of under twenty per cent have always lived (Carl Moyer). All patients with burns involving a twenty per cent area and over should be considered serious. Burns of twenty per cent in adults are equivalent to those of fifteen per cent in children and ten per cent in infants.

It is in the treatment of burns involving from twenty to sixty per cent of the body surface where the greatest advances have been made in recent years. This has been accomplished by a better understanding of the urgent need for adequate and correct replacement of colloids and electrolytes during the first few days of the burn. Many patients, however, were made to live longer by this better initial care only to die later of inanition and/or organ degeneration secondary to prolonged negative nitrogen balance.

Following this initial period of treatment more must be done to bring about permanent survival of the severely burned patient. The crux of such planning appears to be in the effort to prevent protein loss, rather than to replace it. In a patient with a forty per cent third degree burn, for example, unless the denuded area is covered within three or four weeks, the patient may become so depleted in protein reserves, blood volume and consequently vital organ function that his down hill course becomes irreversible. In such patients no amount of forced feeding by mouth and/or vein seems able to compensate for the continued negative nitrogen balance.

Ideally, a severely burned patient should be prevented from attaining that degree of protein depletion which produces an obviously increasing weakness. This may be accomplished by an early plugging up of the holes



FIG. 1. Case 1. Photograph taken one week after burn. It is still difficult to distinguish between second and third degree areas of burn.



FIG. 2. Case 1. Photograph taken 18 days after burn and immediately before debridement under general anesthesia. It is quite evident now that areas on the posterior thighs and buttocks are of third degree depth.

in the "granulation tissue sieve," and, at the same time by keeping up the protein intake.

The problem is well illustrated by the presentation of two cases treated for severe burns.

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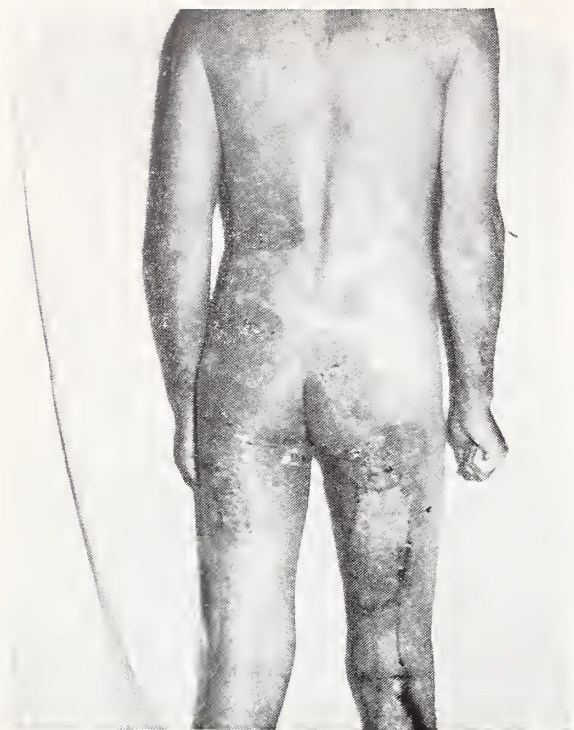


FIG. 3. Case 1. Photograph taken 59 days after the burn. The patient is ready to return to work. The areas on the posterior thighs and buttocks which were debrided and split-grafted are barely discernible.

Case 1. Example of early debridement and coverage in a case of severe burns (Figs. 1, 2 and 3).

This case is that of a previously healthy, 27-year-old male who sustained second degree burns involving a 20% area and third degree burn involving a 12% area when his mattress caught on fire from a lighted cigarette.

During the first 24 hours the patient received 500 cc of whole blood, 500 cc of Dextran, 3,500 cc of an electrolyte solution and 2,000 cc of 5% dextrose in water. During the second 24 hours he received 2,500 cc of electrolyte and 1,500 cc of 5% dextrose in water. After the second day he received 500 cc of electrolyte and two more units of whole blood in all.

On the 18th day after the burn the third degree areas over the posterior thighs and buttocks were debrided and three days later were splitgrafted.

The patient was discharged as completely healed and rehabilitated shortly after the final photograph, which was taken 59 days after the burn (Fig. 3).

Case 2. Example of a severe burn, which could not be debrided and grafted early resulting in serious protein depletion and the need for homografting as an intermediate step.

This case is that of a 64-year-old white male with a history of alcoholism, who suffered second degree burns involving a 20% area and third degree burns of 40% of his body surface, when his clothes caught fire from a pile of brush he was burning.

During the first 26 hours the patient received 1,000 cc of whole blood, 2,500 cc of plasma, 2,500 cc of Lactate Ringer's solution and 3,000 cc of 5% dextrose in water.



FIG. 4. Case 2. Photograph showing anterior chest 39 days after burn and one day after application of placental membranes. Note apparent take of membranes (compare with Fig. 5). The "holes" in the "granulation tissue sieve" have been temporarily plugged.

During the next 24 hours, he received 500 cc of plasma, 2,000 cc of electrolyte solution and 1,000 cc of 5% dextrose in water.*

Following his recovery from the initial shock period the patient showed mental deterioration and developed attacks of syncope such that a general anesthetic was considered inadvisable. Consequently, early debridement could not be performed and when the eschar separated finally, at the end of the fifth week, the patient had become so weak that homografting was urgently needed.

Since skin homografts were not at first available placental membranes were used. They were applied at the bedside, being layed directly on the granulating areas and left exposed, protected from the bedclothes by a cradle (Fig. 4).

The membranes were replaced at one- to three-day intervals because of their short survival time, five applications being made over an 8-day period and a sixth, nine days later. During this time the patient's strength so increased that postage stamp autografts were applied to a few areas of the arms under local anesthesia, and later the larger type of split grafts were applied under general anesthesia.

On the 44th day after the burn six strips of skin were obtained from the patient's sister and applied to the granulating area on the anterior chest wall (Figs. 5 and 6). These homografts took perfectly and survived for two months, growing even to the point where they had begun to coalesce in places (Fig. 7).

*The important early care in this case was under the direction of Dr. R. J. Hughes on the service of Dr. A. C. Adams at the Eastern Maine General Hospital.



FIG. 5. Case 2. Photograph showing anterior chest 44 days after burn and immediately before homografting with sister's skin. Note that placental membranes have come off.



FIG. 7. Case 2. Photograph showing appearance of anterior chest one month after homografting with sister's skin. Note that grafts have grown and even coalesced in some places.



FIG. 6. Case 2. Photograph showing anterior chest immediately after homografting with six strips of split skin from sister, three strips from each thigh.

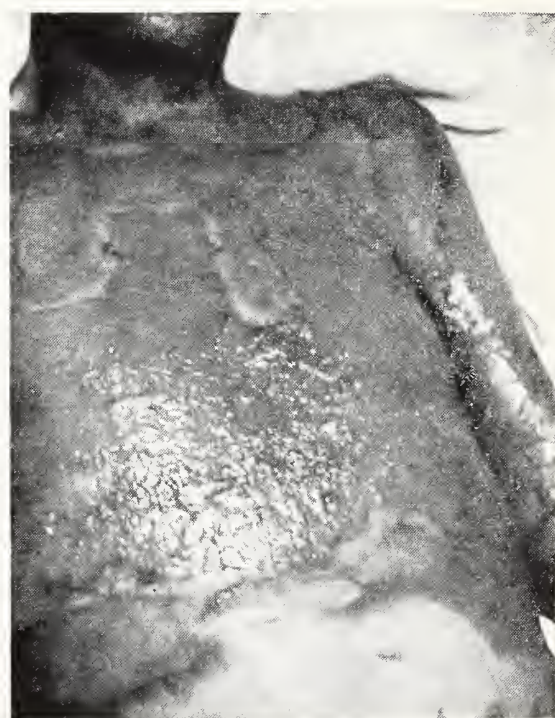


FIG. 8. Case 2. Photograph showing anterior chest two months and nine days after homografting. Note that homografts have disappeared while autografts (on left arm and shoulder and upper chest) are healthy.

When the homografts deteriorated and fell off, (Fig. 8), the area was replaced by the patient's own skin at a final operation. Two weeks later he was up and about, though walking with some help. A short time after this he unfortunately developed a severe case of acute hepatitis and died a month later while still in the hospital. At necropsy the hepatitis was confirmed as a cause of death, but its exact nature could not be demonstrated.

In all, the patient had been hospitalized for 163 days.

DISCUSSION

Before the "holes" in the "granulation tissue sieve" can be plugged up the patient must not only be out of immediate danger from shock and toxemia but it must be known exactly how much of the burn is of third degree depth. Only then can the area of dead tissue be safely ex-

cised and the denuded base prepared for grafting. It would be a grave error to unnecessarily excise a large area of only partially burned skin or to delay too long excision of a similar area of totally burned skin. But how is one to be sure that a given area is of second degree depth and not third?

DIFFERENTIATION OF SECOND AND THIRD DEGREE BURNS

The differentiation between a second and third degree burn may be difficult at times, but ordinarily the signs are sufficient to warrant a decision before the end of the second week. There are several aids to this differentiation.

The history is most important. In general first degree burns are caused by the sun, second degree by hot liquids, and third degree by flame. (Electrical burns usually involve more than just skin, resulting often in gangrene of digits and even limbs.)

Next in importance is the appearance of the burned area. In third degree burns the wound is at first white, depressed and dry; second degree burns are red, raised and moist. After the eschar develops (in about two days), it is thicker in third degree burns than in second, and later it wrinkles and becomes loose as the tissue under it becomes soft.¹

Finally there is the testing of sensation. In first degree burns sensation is always hyperesthetic; in second degree burns, it is usually so, though it may be hypoesthetic in the deep second degree variety; and in third degree burns it is totally anesthetic even to a sharp needle weighted with a three gram lead.² Such tests are necessarily subjective and not always reliable. Some second degree burns may be deceptively anesthetic especially on the face, scalp, palms and soles.³

At one time the fluorescein test was thought to be the best method of differentiation. Using sodium fluorescein intravenously and viewing the area under ultraviolet light through a Wood filter the third degree areas were found to appear black due to lack of circulation while the second degree areas were a yellow-green (normal).⁴ It has been pointed out, however, that the circulation in the damaged tissues may become temporarily arrested and the tissues appear black under ultraviolet light, whereas the burn later proves to be one of only partial thickness.⁵ The test is therefore of less value than at first hoped.

When it has once been decided what burn areas are definitely of third degree depth the areas should be excised. The time preferred by different authors varies from four days to three weeks; in doubtful cases it may be best to wait the full three weeks. By the end of this time areas of only second degree depth should show epithelization under the crust while those of third degree will still have an adherent eschar.

When third degree areas of slough are ready to be removed they should be excised with a view to both avoiding and replacing blood loss. Limbs should be de-

brided either with a tourniquet in place or with the limb elevated. In most cases having areas of twenty per cent or more of third degree burn, two units of blood should be at hand for replacement. Areas involving more than thirty per cent should ordinarily be debrided in stages.

There are some areas which are exceptions to the rule that all burns of third degree depth should be excised. These include the head, neck and genitalia. In third degree burns of the hands and feet it was at one time considered better to let the slough separate by itself. It is now, however, recognized that in hand burns a crippling degree of stiffness in the finger joints can best be avoided by the removal of slough and split grafting by the tenth day at the latest and as early as the fifth if possible.⁵ Burns of the feet should also be debrided and grafted early.⁶

When slough has been removed down to a clean bleeding base, usually of fat, one should wait one to four days before split grafting. This delay not only helps in avoiding hematomas under the grafts, but makes the take more likely by permitting an increase in vascularity of the fatty base. The prepared area should be kept moist and the dressings changed daily.

The actual debriding of the wound is usually done with a scalpel or a pair of scissors. Meeker and Synder have recently found the electric dermatome useful for this procedure removing the eschar in layers of 10/1000 to 15/1000 inches thickness at a time, in two to four operations at intervals of one or two days.⁷

Varidase® (Streptokinase) is of no help in removing burn slough as it attacks fibrin and not collagen. Nor have any of the newer enzymes proved to be better than saline soaks.⁸

SPLIT GRAFTS

If the total third degree burn area is not greater than thirty per cent the necessary split grafts can usually be taken from the patient himself (autografts); if the burn area is enough greater so that the added strain of taking split grafts from another area of the same patient would endanger his survival, then at least some grafts should be used from another individual (homografts). However it is done, the raw area left by the excision of slough should be covered as soon as ready (usually within one to four days).

In burns involving less than thirty per cent of the skin surface, homografts may sometimes be needed. This may happen in cases where a delay has been necessary in effecting the removal of eschar and/or there has been a loss of one or more crops of autografts from infection or other cause. Jackson has emphasized the use of early homografts in non-fatal burns as a prophylactic measure.⁹

Homografts may be obtained from either a live human being or from a cadaver up to ten hours after death.⁹ The grafts are taken under sterile precautions and preferably in the operating room just as are split thickness grafts under ordinary circumstances. The

**When skin is not available
for homografting in extensive burns
placental membranes may be used, and,
we believe, may be life saving.**

person or cadaver donating the skin should be checked for freedom from carcinoma, and possible transmissible infections, particularly acute hepatitis. Blood group compatibility is not necessary. Skin for homografting can be preserved by being rolled up in moist saline sponges and kept at a temperature of from 1 to 4 degrees C. Skin so preserved will survive for three or more weeks without fear of deterioration. Homografts after application usually survive from three to ten weeks and will even grow and coalesce during that period. They do not survive permanently however except in cases of identical twins or in the rare event when the recipient is suffering from agammaglobulinemia.¹⁰

PLACENTAL MEMBRANES

When skin is not available for homografting in extensive burns placental membranes may be used, and, we believe, may be life saving. This was apparently first done by Kubanyi and reported in 1948.¹¹ The same precautions with regard to the possible transfer of disease as observed for skin homografts (see above) should also be observed in the case of placental membranes. A simple way to prepare the placental membranes is to cut them from a fresh placenta with a pair of scissors under sterile conditions leaving the amnion and chorion still adherent to one another. They should be rinsed in saline (Sterling¹⁶) and then wrapped in sterile sponges moistened with saline. They may be preserved as are skin homografts by covering and storing them at 1 to 4 degrees C, and will probably survive for as long. (In one of our cases they were used successfully more than three weeks after storing.)

When the appearance of the burn area is satisfactory for grafting, the amnion and chorion are separated by peeling them apart and applied by laying them on the denuded or granulating surface with the previously adherent side down. Both amnion and chorion may be used and apparently to equal advantage. In one of our patients recently treated by this method, the placental membranes survived between one and three days only. Other workers have observed longer takes.¹² In our case, however, by replacing them repeatedly the short survival time was circumvented and the effect was decidedly beneficial.

Homografts of placental membranes are probably not as effective in preventing protein depletion as are those of skin. They are however of apparent value in bridg-

ing over the interval between the time when an extensive burn area is first in need of coverage and when the better skin homografts can be secured. It may even be found, in certain cases, that placental membranes can bridge the whole gap between the time for homografts and the time for autografts.

Placental membranes may also be used to advantage in dressing donor areas and are particularly valuable where the donor area is extensive. The use of placental membranes on donor areas was apparently first mentioned by Douglas.¹² We have recently used placental membranes as a covering for donor sites both with and without dressings. In the latter event we have simply layed them on, left them exposed and allowed them to dry. No sutures are used in either case. Care is needed only to keep the area sterile and to avoid hematomas under the membranes. When used on donor areas the membranes appear to take like split skin grafts and provide a protective dressing which is effective in not only preventing the escape of proteins but in rendering the donor area painless. If left exposed the membranes may become dry, stiff, and even crack after a few days but discomfort from this can be readily corrected by laying on strips of vaseline gauze.

Antihistamines are said to prolong the life of homografts.¹³ They have not been used in our treatment of severe burns.

Cortisone and ACTH may be given to advantage during the shock stage occurring in the first day or two following severe burns in children but should not be continued longer than five days.¹³

ANTIBIOTIC SOLUTIONS

Regarding the topical use of antibiotic solutions in the preparation of granulating areas for grafting, a word of caution is in order. Solutions containing mixtures of Bacitracin,[®] Neomycin[®] and Polymyxin[®] in the proportions advised by Meleney are now on the market.¹⁴ They do improve the appearance of the recipient area-to-be and, doubtless lower the bacterial count and aid in a take for the grafts *if the solution is used for only a few days*. If, however, the applications of the antibiotic solution are continued, for whatever reason, for over three or four weeks they may cause far more harm than good.

In two cases presenting denuded skin areas where such a solution was used for prolonged periods, a staphylococcus infection developed which was of such virulence and tenacity, that split skin grafting failed repeatedly and efforts at coverage had to be delayed for several weeks. This only confirms the recent conclusions of several authors that "in the course of antibiotic therapy, resistant mutants multiply while more sensitive strains are eliminated."¹⁵

Except for short periods and in special instances physiological saline is still our best solution for use as wet dressings in the preparation of denuded areas for grafting.

SUMMARY

Serious third degree burns must have all dead tissue removed as a preparation for grafting before protein depletion becomes serious. The best time is between the fourth and twenty-first days, whenever third degree areas become clearly distinguishable from second. After the fourth day the initial shock and toxemia have usually been corrected, and before the end of the third week protein loss has seldom become serious.

Areas that should not be debrided but where the eschar should be allowed to separate by itself include the face, neck, and genitalia. Burns of the hands and feet especially should be debrided early when possible.

No more than thirty per cent of the body should be debrided at one time. Blood loss at operations should be completely replaced.

Skin grafts for coverage may be either of the autograft (own patient's skin) or homograft (skin from another individual) variety. Autografts are usually preferred because they survive permanently. Homografts, though temporary, are used when a patient is too depleted of proteins to stand the strain of autografts. They may be secured from either another live individual or a recent cadaver and may be safely stored for over three weeks.

Placental membranes have recently been used successfully as a substitute for skin homografts. They are also of apparent value as dressings for split graft donor areas.†

†I wish to express my thanks to Dr. L. G. Miragliuolo for his translation of the article by Kubanyi.

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Salicylate Poisoning: Treatment With Replacement Transfusion

A Case Report

JOHN F. RADEBAUGH, JR., M.D.* AND FREDERICK C. EMERY, M.D.*

Salicylate poisoning has presented a challenge because it may produce acid base abnormalities, central nervous system stimulation or depression, coagulation defects and tetany, all of which complicate the treatment.

Aspirin and Methyl Salicylate (Oil of Wintergreen) are the salicylates most often involved in childhood poisonings. These compounds caused 113 deaths in the United States in 1952. A majority of these deaths occurred in children under five years of age. Frequent among these was the use of flavored aspirins, as recorded by the Committee on Toxicology of the American Academy of Pediatrics.²

Salicylate poisoning has presented a challenge because it may produce acid base abnormalities, central nervous system stimulation or depression, coagulation defects and tetany, all of which complicate the treatment.^{1,6,7,8,15}

Recently such a patient, exhibiting many of the above difficulties, was seen at Eastern Maine General Hospital, and methods to combat the acid base derangement were initially unsuccessful. A replacement transfusion was performed.

CASE REPORT

This two-year-old white male was admitted with a history of vomiting for forty hours, and rapid breathing for thirty-eight hours.

One week prior to admission the patient had a cold, which subsided after two days of coryza and slight cough. He appeared well until two days prior to admission when he seemed listless and did not eat his supper. His temperature was 99 by rectum, and he soon developed unrelenting vomiting and hyperpnea. One day before admission he began to perspire excessively and his physician found that the patient did not have

glycosuria. On the day of hospitalization his vomitus became "coffee-ground" in appearance.

His parents denied that he had taken any aspirin or other medicine but a bottle of flavored aspirin tablets was kept in the bathroom cabinet.

Past History: Not significant. The patient had no known bleeding tendencies. He had had no convulsions or behavior difficulties.

Family History: Significant only in that the maternal grandmother died of leukemia.

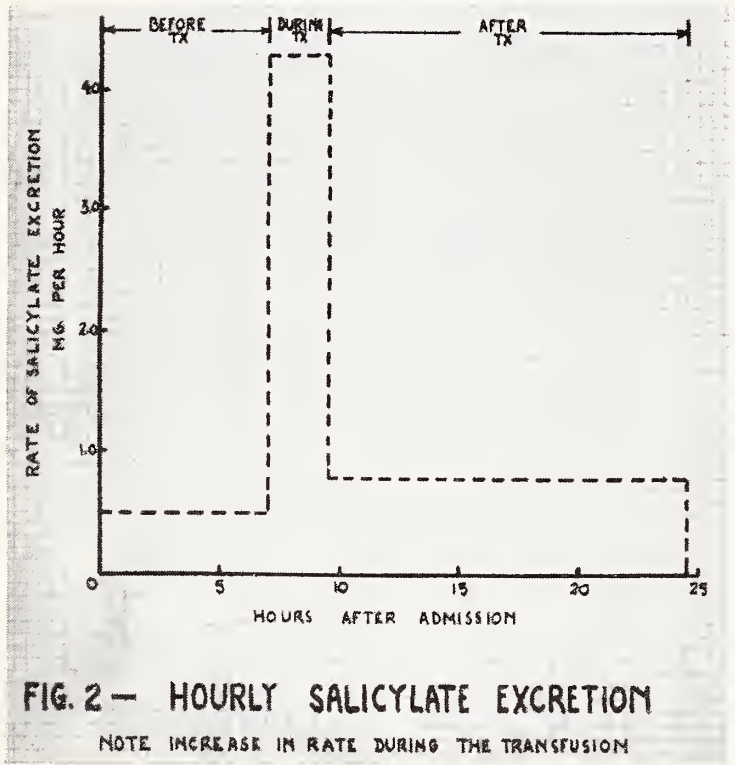
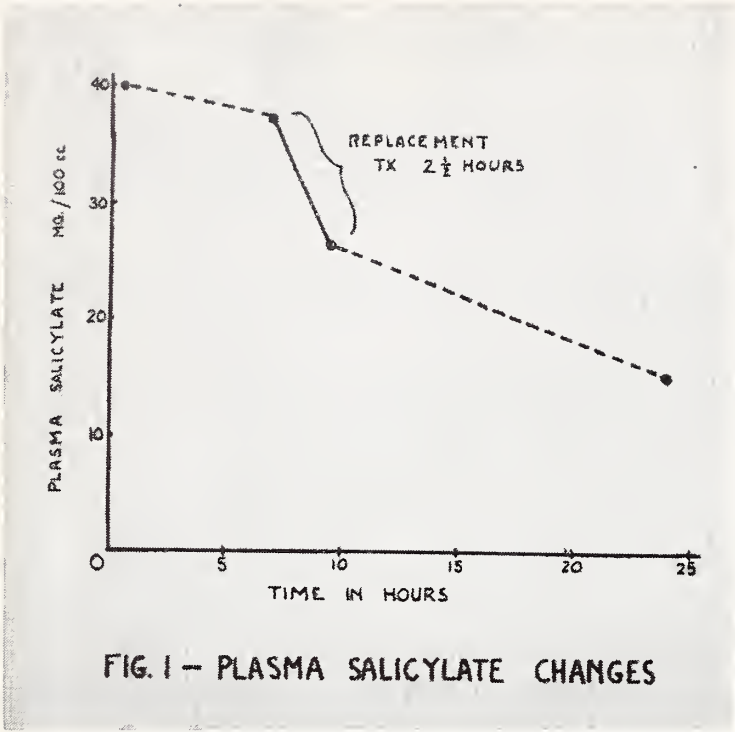
Physical Examination: Temperature 99.8. Pulse 140. Respirations 36, deep, labored. Blood pressure 90 systolic. This very dry, disoriented, acutely ill, comatose two-year-old boy with Kussmaul breathing showed marked enophthalmia, dark brown mucosa of the throat, parched tongue, teeth covered with a thick, red-brown saliva. Neck was supple. Pupils reacted sluggishly to light. The deep tendon reflexes were equal, hyperactive, but there was occasional twitching of the left arm and leg. The Chvostek sign was absent.

Hospital Course: Initially it was felt that this child had diabetic acidosis. A catheterized urine specimen showed pH 4, acetone 4-plus, and only a trace of sugar. Accordingly, this diagnosis was abandoned and a salicylate level was found to be 39.8 mgms. per 100 ml. (by method of Brodie). Initial CO₂ was 4 meqs. per liter. Urine had numerous white blood cells and 8 hyaline casts per low power field. Specific gravity was 1.002. Initial white blood count was 54,500 with 56% polys, 21% bands, and 22% lymphocytes. The hemoglobin was 12.2 gms. per 100 ml.

The patient vomited guaiac-positive material, and also passed a guaiac-positive stool.

An initial hydrating solution of 300 cc. of 5% dextrose in half normal saline was started intravenously. As soon as the salicylate level was known the solution was changed to equal parts of 5% D&W and one-sixth molar sodium lactate. After six hours of such treatment the urine pH was only 5.5, and it was obvious that the patient was not excreting salicylate at an optimum level. In addition, the patient was completely disoriented, twitching frequently on the left side, and respirations had risen to sixty per hour. He was considered to be in extremis.

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A cut-down was performed† in the right long saphenous vein 2 cms. below its termination in the femoral vein. A poly-ethylene catheter was inserted in a proximal direction into the saphenous vein and passed upward into the common femoral vein. Vitamin K-1 oxide, 72 mgms., was given intravenously and an exchange transfusion was performed through this catheter in a fashion similar to that done through the umbilical vein in infants. 500 cc. of fresh, O-positive, cross-matched blood was transfused. 1 cc. of calcium gluconate was given through the catheter after each 100 cc.

†By Dr. Thomas H. Palmer, Jr., of the Surgical Service.

of blood exchanged, and 2 cc. of calcium gluconate was given at the termination of the transfusion. Following the procedure the child responded, became alert, noted his surroundings for the first time, and respirations slowed to 36 and became regular. His color, which had been extremely pale, was improved, and the twitching stopped.

It was decided to terminate the transfusion and repeat it later if necessary, rather than exchange another 500 cc. of blood.

Follow-up treatment consisted of 1200 cc. of an intravenous solution containing sodium 60.5 meqs. per liter; chloride 51.5 meqs. per liter; lactate 26.5 meqs. per liter, and potassium 17.5 meqs. per liter. Twenty-four hours later the patient was on full fluids by mouth.

The pre-transfusion salicylate level was 37.2 mgms. per 100 m., a drop of only 2 mgms. from the admission levels. Post-transfusion salicylate level was 26.5 mgms. per 100 ml. — a drop of 10.7 mgms. On the following day the level was 15 mgms. per 100 ml. The pre-transfusion prothrombin time was 86 seconds, and the post-transfusion prothrombin time was 19 seconds. The post-transfusion hemoglobin was 11.4 gms. per 100 ml., cell volume 31%, and at time of discharge was 12 gms. per 100 ml., hematocrit 33%. A final urinalysis, at the time of discharge, showed 1-3 white cells per high power field, no albumin or sugar, pH 5.0. Total hospitalization was six days.

The patient was observed during the next few weeks, and seemed to be perfectly normal. Eight months after discharge the patient was developing normally, without evidence of growth disturbance or cerebral dysfunction.

DISCUSSION

This patient exhibited many of the difficulties seen in salicylism, and, in spite of an apparently low level of salicylates, (39 mgms. per 100 ml.), was in a moribund state. Riley¹² comments that the severity of symptoms in children does not always reflect the height of the salicylate level. He reports on five patients with death from salicylism with levels varying from 20 mgms. per 100 ml. to 45 mgms. per 100 ml. He also reports that severe toxicity has been noted with levels of only 9 mgms. per 100 ml., 8 mgms. per 100 ml., and 4 mgms. per 100 ml. in other infants observed by this group. These are in contrast to the higher levels usually reported to be toxic or fatal in adults.¹³

The physiology of salicylate intoxication has been well studied and described. Salicylates have been shown to produce a primary hyperventilation by stimulation of the respiratory center.⁸ Removal, in experimental animals, of the corpus quadrigemina prevents the development of hyperpnea from salicylate toxicity.¹⁶ These effects have been known to occur in patients whether they are alkalotic or acidotic.⁶ With the hyperventilation, and the loss of CO₂, a respiratory alkalosis ensues which may produce severe renal effects. Later, as the plasma carbon dioxide decreases to a level of approxi-

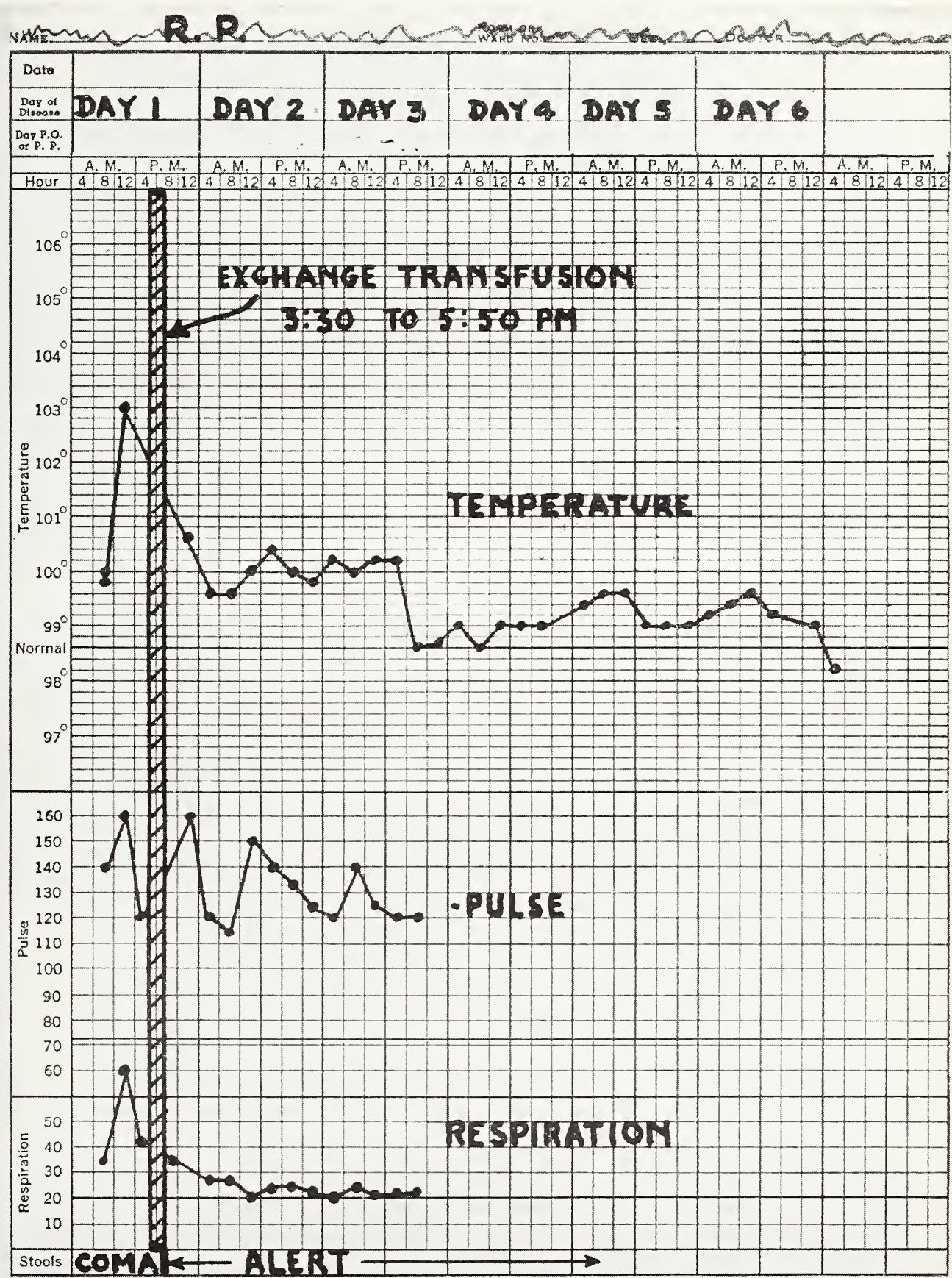


FIG.3- HOSPITAL COURSE

mately seven millimols per liter, the patient enters a stage of metabolic acidosis. Hyperventilation will continue through this stage, and urine may be acid in either the alkalotic or the acidotic stage, thus showing the unreliability of urine pH in this illness for establishing the type of acid base imbalance.^{11,12,13}

Most authors agree that it is important to obtain both the carbon dioxide and a pH in order to determine when the change from alkalosis to acidosis occurs.

Complications, such as cortical edema, petechial hemorrhages of the central nervous system, and toxic encephalopathy may complicate treatment and actually produce death.⁵ Often in experimental animals cause of death is central respiratory paralysis secondary to circulatory collapse, or encephalopathy.

Other problems, including tetany secondary to severe alkalosis, and hypoprothrombinemia can be corrected by appropriate treatment.^{11,12} The effect on the prothrombin level is enhanced by fever and by increased metabolism. This action can be stopped by the use of intravenous vitamin K-1 oxide, or by fresh blood, or both. Doses are described in several articles.^{10,11,12}

The urine pH is often in the acid range, which inhibits the rate of salicylate excretion. Excretion is ten times greater in alkaline urine. The use of alkalis may produce cerebral vasodilatation and increased intracranial pressure during respiratory alkalosis, and may result in convulsions or complete respiratory failure, as described by Wallace.¹⁵ This may, perhaps, explain the course of our patient who appeared to deteriorate under therapy. Other factors in treatment have been reviewed, including the use of carbon dioxide by mask, methods of depressing the respiratory center with barbiturates, and the use of respirators or the electrophrenic stimulator.^{1,7}

Since 1914, when Abel, Rowntree, and Turner found that salicylate removal was speeded by the use of the artificial kidney in dogs, there has been interest in the use of some method of dialysis in rapidly removing salicylates in acute poisoning. Doolan described in 1951 a thirty-nine-year-old man with salicylate poisoning who was placed on the artificial kidney. 1,300 mgms. of salicylate were removed in one hour of dialysis, but due to technical difficulties the procedure had to be terminated. This patient died, but the rapid excretion of salicylate was proven. Following this, Doolan selected two normal subjects for controls, and two patients with chronic renal disease to dialyze on the artificial kidney. All four were given the same dose of aspirin, and it was found that the patients with chronic renal disease when dialyzed excreted salicylate five to seven times more rapidly than the controls, who were not dialyzed.⁵

From the same institution, Schreiner reported two cases of salicylism with blood levels in the low 90s; one patient in coma was dialyzed for six hours. His salicylate level dropped from 91 to 34 mgms. per 100 ml. and he recovered without permanent damage.¹⁴

Although the artificial kidney is the ideal treatment

A case of aspirin poisoning

treated by exchange transfusion is

reported . . . and it is demonstrated as a procedure which would be available in smaller

institutions for emergency use.

at present, it is difficult to use in smaller institutions. T. R. Boggs reported the use of an exchange transfusion in boric acid poisoning in an infant.³ This successful procedure was accomplished by transfusing or exchanging a quantity of blood approximately four times the patient's blood volume. Later a second exchange transfusion was used with a volume two times the infant's circulating blood volume. Taking this cue, A. K. Done and L. J. Otterness exchanged an infant, with oil of wintergreen poisoning.⁴ This child, with a pre-transfusion level of 86 mgms. per 100 ml., had an immediate drop to 51 mgms. per 100 ml. at the completion of the transfusion. Katz reported a case of acute isoniazid poisoning, treated by an exchange transfusion.⁶ For details of these procedures the article by Done gives a clear example of the method. This does not differ appreciably from that done through the umbilical vein in infants with erythroblastosis fetalis.

It is possible that the patient whom we described would have survived with continued intravenous therapy and judicious use of vitamin K-1 oxide, carbon dioxide, oxygen, and calcium treatment. However, having experience with two fatal salicylate poisonings with levels in the range of 40 mgms.%, both of whom showed similar convulsions and stupor, the present authors felt that more radical treatment was indicated. It is interesting that the patient showed marked clearing of his sensorium during the transfusion, and was crying and objecting to the procedure at its termination. A further transfusion would have been indicated if symptoms were not alleviated, but it was elected to stop with the 500 cc. This, of course, replaced only a portion of the total blood volume of this child.

SUMMARY

A case of aspirin poisoning treated by exchange transfusion is reported. Certain aspects of salicylate physiology and toxicity are discussed along with the associated difficulties and treatment.

This adds to the successful use of this procedure previously prescribed for the treatment of methyl salicylate poisoning, boric acid poisoning, isoniazid poisoning, and carbon monoxide poisoning, and is demonstrated as a procedure which would be available in smaller institutions for emergency use.

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Continued on page 455

Mullerian Duct Fusion Failures

Three Selected Cases

WILLIAM M. SHUBERT, M.D.*

**Timely diagnosis of
"fusion failures" has led to definitive treatment
yielding improved fetal salvage.**

Due to variable union of the Mullerian Ducts (paramesonephros), many vaginal and uterine anomalies of related nature have been identified and studied. Uterus didelphys was first reported in 1873 by Frankel,⁽³⁾ and since that time more than 400 cases have been reported.

These were probably a small fraction of the actual incidence of this type of anomaly. In studies of pregnant women the incidence of "fusion" anomalies varied; Baker⁷ found it to be 1:350, Fenton² 1:633 and Jones¹ 1:751. In similar investigations of non-pregnant women, the incidence reported by Stolper was 1:7400, and by Neugebauer 1:6000.³ Thus, a "fusion" anomaly in conjunction with pregnancy is not a rare finding.

It is now apparent how, in certain instances, fetal survival may be enhanced by enlightened management dependent upon knowledge of the presence of an anomaly. Beyond this, a scrutiny of the literature reveals the futility of trying to assess each anomaly individually. A basic deficiency in meeting this problem is the absence of an officially accepted classification of anomalies. In this regard, there are classifications suggested by Jarcho, Litzenberg, Stander, Greenhill, and Fenton and Singh. The most acceptable of these appears to be an anatomically descriptive classification using cornis, collis, and vagina for identification, and uni, bi, septus, sub-septus, simplex, and duplex for description. Thus, uterus bicornis bicollis with vagina duplex is identified as the anomaly commonly referred to as uterus didelphys.

The solvable problems of "fusion" anomalies are usually associated with pregnancy, and these are in two categories. First are the problems of management when confronted with dystocia, uterine inertia, vaginal septum, rupture, post-partum hemorrhage, breech and other malpresentations. In a Sloane Hospital series, the incidence of breech and other malpresentations was

17.5%. It was concluded that while vaginal delivery is the rule, fetal mortality could be reduced by liberalizing Cesarean section for breech and other malpresentations.⁽²⁾ The gross fetal mortality at term from all complications is 14.2%, which is considerably above the expected rate for normal people.⁽⁵⁾ Foreknowledge of the anomalous uterus can lead to better management.

In the second category are those patients with established records of fertility, but who have demonstrated failure to carry to term. There are numerous reports of abortion rates of about 25%. Again at Sloane Hospital, the viable birth rate was 66.4% of which 56.1% went to term.⁽²⁾ It is apparent that most pregnancies in anomalous uteri occur in two types; the bicornuate uterus (46.5%), and uterus didelphys (38.6%).⁽⁷⁾ Strassman has shown that fetal survival can be greatly enhanced in those types, which are amenable to plastic reunification. In a selected group with proven fertility, plastic reunification resulted in a rise from 3.7% term pregnancies pre-operatively to 85.6% post-operatively, and a drop in abortion rate from 70% to 12%. The ratio of vaginal vs. Cesarean delivery was 6:1 with no case of rupture reported. It is emphasized that selection for surgical correction is predicated on proven fertility.⁽⁴⁾

Recognition of utero-vaginal anomalies is quite simple when a vaginal septum or double cervix is noted. However, the investigation can only be completed by utero-tubogram. The index of suspicion should be raised for all cases of sterility, habitual abortion, premature labor, and unexplained stillbirths.⁽⁷⁾

The possibility of endocrine and metabolic difficulties should also be considered.

While investigating the uterus, one might also remember that associated anomalies of the urinary apparatus are not uncommon. Howard Taylor states that 90% of patients with urinary abnormality also have genital malformation. Conversely, 30-40% with genital malformations have an associated urinary abnormality.

Following are three selected cases with x-ray studies:

Case 1. Age 18. Normal menstrual history. Initial examination during pregnancy disclosed double cervix and duplex vagina with 45 degree rotation of the lower third of the vaginal septum. Delivery was at term with vertex presentation, complicated only by resistant

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FIGURE 1

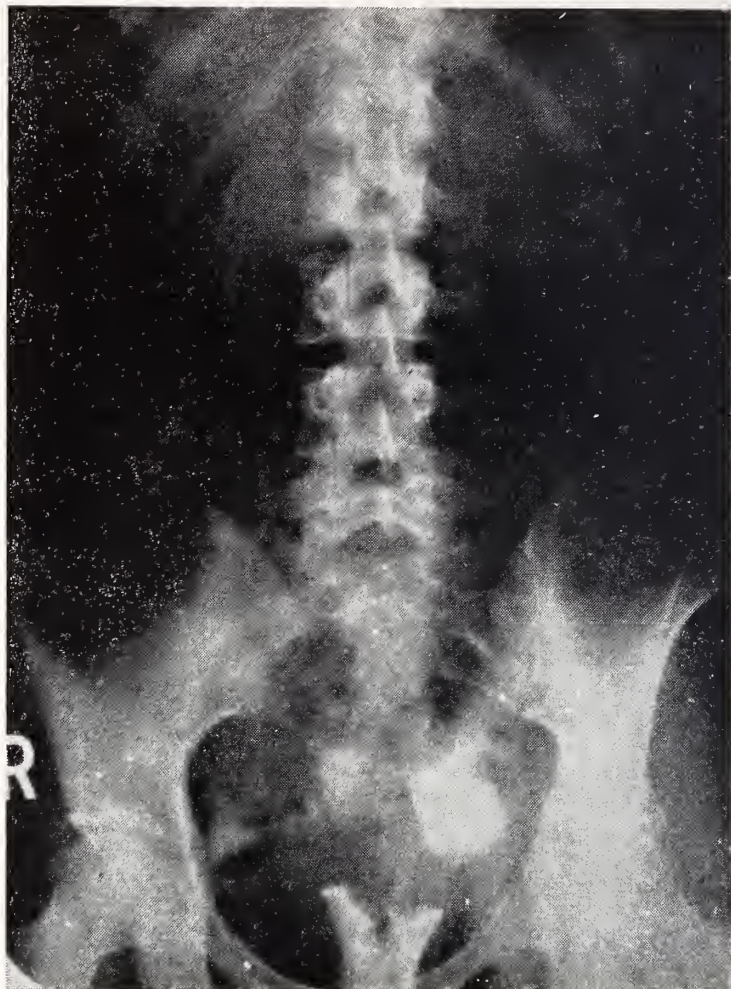


FIGURE 2



FIGURE 3

septum which abrupted spontaneously. Four days post-partum an IVP disclosed congenital absence of the right kidney.

Case 2. Age 21. Normal menstrual history. Presented as a sterility problem. Married four and one-half years. Husband's sperm count normal. Physiology apparently normal. X-ray revealed uterus bicornis bicollis with duplex vagina. Septum excised January 1957. At this writing there has been no report of pregnancy.

Case 3. Age 20. Normal menstrual history. Referred

for evaluation of genitals. X-ray revealed uterus bicornis bicollis with duplex vagina. Septum excised July 1954. LMD reported pregnancy with uncomplicated term delivery November 1955.

CONCLUSIONS

1. "Fusion" anomalies of the genital apparatus are not rare, and are often associated with urinary tract anomalies.
2. Research in this subject is hampered by lack of a universally accepted classification of anomalies.
3. Enlightened management and surgical correction, when indicated, improves fetal salvage.

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Treatment Of Barbiturate Poisoning

Report Of Case And Review Of Literature

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A case of severe barbiturate poisoning treated by general and specific measures is presented. . . . Patients with this type of poisoning can be, and perhaps should be, treated with analeptics.

Recent reports¹⁻³ continue to emphasize the use of analeptics in the treatment of severe barbiturate intoxication with little mention being made of the extensive studies on supportive management.⁴ The case presented below illustrates supportive management without the use of analeptics and is followed by a review of the literature on the subject. This case demonstrates that barbiturate intoxication can, and perhaps should, be treated with conservative measures.

CASE REPORT

A twenty-three year old white male graduate student was admitted to the Grace-New Haven Community Hospital at 2:45 a.m. on October 29, 1956 in a semi-comatose state. He had taken three Seconal[®] capsules, either $\frac{3}{4}$ grain or 0.1 gram, a short time prior to 12:30 a.m. He was last seen conscious between 12:30 a.m. and 1:00 a.m. when he was known to have swallowed a "handful" of the capsules. He was found in a stuporous condition about 2:30 a.m.

At the time of admission his respirations were shallow and he was slightly cyanotic. The blood pressure was 40/0 mm.Hg. and his pulse was 72 per minute. No pupillary, corneal or deep tendon reflexes were present. Gastric lavage was performed and a large amount of reddish material, believed to be residue of ingested drug, was obtained. Some aspiration of gastric contents may have occurred during the lavage.

A few minutes after admission he became apneic. Manual artificial respiration was begun, an endotracheal tube passed and oxygen started. Following the administration of oxygen and 25 mg. of ephedrine, intramuscularly, his blood pressure increased to 90/40

mm.Hg. and the administration of intravenous fluids was begun. He was taken to the ward where he was placed in a tank respirator and respirations were artificially maintained for the next twelve hours. At the end of this time he was removed from the respirator and was continued on oxygen. Endotracheal suction was performed every two hours.

During the first two hours after admission the systolic blood pressure ranged from 80 to 90 mm.Hg. After the injection of 5 mg. of Urecholine[®] (bethanechol) in an effort to empty the bladder without catheterization, his systolic pressure fell to 50 mm.Hg. Two ampoules, 4 mg. each, of Levophed[®] (nor-epinephrine) was added to an intravenous infusion of 1000 cc. of 5% dextrose and the systolic pressure returned to 80 mm.Hg. Later the concentration of Levophed was increased to 5 ampoules, with the infusion regulated at fifty drops per minute, in order to maintain his systolic pressure above 100 mm.Hg. He received about 3500 cc. of fluids intravenously, daily, during the next seventy-two hours with supportive measures including penicillin and streptomycin. Other details of treatment are summarized in Table I.

The patient remained without reflexes for thirty-two hours, at which time his pupils began to react to light. He started coughing about fifty-four hours after admission and the endotracheal tube was removed. There was no evidence of laryngeal edema, i.e., there was no hoarseness or evidence of respiratory obstruction. He remained comatose for about seventy-two hours.

His temperature was normal on admission but rose to 103° F. (rectal) approximately twelve hours later, at which time dullness to percussion and decreased breath sounds were noted in the left lower lung field. Hemolytic *Staphylococcus aureus* was cultured from his sputum two days later, following which erythromycin (Ilotycin[®]), 1 gm. per day, was substituted for the penicillin and streptomycin. Approximately seventy-two hours after the ingestion of the barbiturate he began responding to verbal commands and from there on made an uneventful recovery.

Pathophysiology. Overdoses of barbiturates result in depression of the central nervous system, hypoxia and arterial hypotension. Although hypnotic doses of barbiturates do not cause a depression of respiration,⁵ overdoses result in decreased minute volume with conse-

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quent hypoxia, respiratory acidosis and possibly hypostatic pneumonia. The decreased minute volume is secondary to depression of the medullary respiratory areas.⁶ Relaxation of pharyngeal and laryngeal structures and aspiration may contribute markedly to the hypoxia. Arterial hypotension is largely due to depression of the vasomotor area, direct depressant action on the myocardium resulting in decreasing cardiac output,⁷ and direct action on peripheral arterioles causing dilatation. The hypotension and central nervous system depression may become more marked when combined with hypoxia.

There are two main forms of treatment of severe, acute barbiturate intoxication; the conservative (supportive) and the analeptic.

Conservative Treatment.^{4,8-11} This treatment aims at helping the body overcome the intoxicating drug by supporting the respiratory and cardiovascular systems in order that the drug may be degraded and excreted as rapidly as possible. The measures employed include:

1. An adequate airway (endotracheal tube if indicated), adequate pulmonary ventilation (artificial respiration may be required), and frequent tracheal suctioning and turning of the patient.
2. Aspiration of the stomach (with the patient in 10-15° Trendelenburg) if admitted within the first few hours.
3. Maintenance of adequate systolic blood pressure by use of vasopressors and intravenous infusions of dextran, whole blood, normal saline or dextrose.

TABLE I
SUMMARY OF TREATMENT DURING FIRST 72 HOURS

Hours after inges- tion	Blood Pressure	Respiration	Reflexes	Medication	Remarks
2	40/0	shallow,	none	25 mg ephedrine	comatose, cyanotic, apneic;
	90/40	apneic		5 % D/W I.V., O ₂	intubated, artificial respiration
3	80/	respirator	"	"	color good
5	80/	"		5 mg Urecholine	
				2 amps Levophed:	catheterized
				50 drops/minute	
6	90/	"	"	5 amps Levophed:	
				50 drops/minute	
9	120/80	"	"	5 amps Levophed:	suctioned every 2 hr.; catheterized
				50 drops/minute	
13	120/80	taken out	"	Penicillin and	(12 hours in respirator)
		24/min		Streptomycin	temperature 103.5° (R)
17		"	"	I.V. fluids with	
				Levophed	
20	120/80	"	"	"	temperature 103° (R)
28	120/80	"	"	"	incontinent of urine
31		"	pupils react	"	corneal reflex absent
35	120/80	"	"	"	LLL dullness
37		24/min	"	"	
40				Levophed discontinued	
42	125/70		"	I.V. fluids: rate of 3500 cc/day	temperature 101° (R)
47			pain per- ceived		
55			DTR's	"	LLL clear, RLL dull
			present		
56			coughing	"	endotracheal tube removed
64			swallowing	"	(after 55 hours)
66			thrashing in bed		
78			responding verbally		comatose about 72 hours; no hoarseness

4. Fluid and electrolyte replacement and partial caloric requirements; about 3500 cc. of fluid per day.
5. Antibiotics, because of the danger of aspiration or hypostatic pneumonia.

An adjuvant to this form of therapy is the artificial kidney;^{12,13} however the technical problems involved and its relative unavailability for this purpose preclude its more widespread use at this time.

This form of therapy was first shown to be effective by Nilsson⁴ in 1951 when he reported the results of treating 176 cases of acute barbiturate intoxication. Eighty-seven were classified as "severe" cases; 71 of these cases being unconscious more than 24 hours. There was a total of four deaths in the entire series, giving an overall mortality rate of 2.3 per cent. Among the "severe" cases there were three deaths (3.4 per cent mortality); each of these patients was deeply cyanotic at the time of admission. Cardon's¹⁰ experience at Bellevue Hospital, where approximately 200 cases of barbiturate intoxication are treated each year, has been comparable since this form of treatment has been used; in 15 months he has not seen a fatality. Clemmesen⁹ reported 1,276 cases of poisoning (about half of which were due to barbiturates) treated in Copenhagen in 1951 with this plan of therapy. In this series there were 21 deaths (1.6 per cent mortality). Locket and Angus,⁸ in England, reported 64 consecutive cases treated similarly except that no endotracheal tube was used. There were two deaths in their series.

Use of Analeptics.^{1-3,6,14-20} There are those who advocate the use of analeptics, presumably the same supportive therapy as enumerated above, in the management of severe barbiturate intoxication. The most frequently used drugs are picrotoxin and pentylenetetrazol (Metrazol®). The rationale for the use of these drugs is to help maintain adequate respirations and to improve the status of the circulatory system by virtue of their pharmacological antagonism. A recent addition to this form of therapy is the use of amiphenazole (daptazole or D.A.P.T.) and bemegride (megimide or NP13).²¹⁻²⁵ There is suggestive evidence that these newer drugs are of value in cases of complete respiratory paralysis. Basically, however, they appear to be only milder analeptics than picrotoxin and pentylenetetrazol.

There are many conflicting statements regarding the mortality rate with this form of treatment. Nilsson's review indicates that it ranges from 8-25 per cent, depending upon the severity of the cases. In 1950, Koppányi and Fazekas¹¹ surveyed the literature for cases bearing on analeptic therapy; they reported on 88, among which were 17 deaths (19 per cent mortality). Thirteen of these had received picrotoxin, one received no analeptic and the remaining three had been given other central stimulants. Being a review of literature, no information regarding depth of depression, length of coma or status of cardio-vascular system was included. Jones, Dooley and Murphy¹⁸ reported 29 cases, 17 of

which were treated with Metrazol. They stated, "No deaths were due solely to drugs (analeptics)." Three of the patients died during the course of therapy, two of them only 13 hours after admission. Reed, Driggs and Foote¹⁹ reported the results of using non-standardized supportive care and unrestricted analeptics in 201 cases in which there were 28 deaths (13.4 per cent mortality). After standardizing their supportive care similar to the plan suggested by Nilsson, but continuing to use analeptics, there were five deaths in 91 patients (5.5 per cent mortality). The mortality rate at Bellevue Hospital,¹⁰ when analeptic therapy was being employed, was about 15 per cent in severe cases. In 1948, analeptics were in general use in Copenhagen, for treating poisonings due to barbiturates, morphine, etc. During that year 802 cases were treated; there were 96 deaths (12 per cent mortality).⁹

DISCUSSION

Comparison of the results presented above reveals a distinct difference in the mortality rate associated with the two forms of therapy (5.5 to 25 per cent with analeptics and 1.6 to 4 per cent with conservative management). Admittedly there are limitations in comparing data gathered by different workers due to variations in the classification of severity, failure to report all cases, etc.; especially when attempting to prove that one method is more effective than another should such limitations be kept in mind. They have been largely overcome in the studies from Copenhagen where all comatose patients are brought to a single center for standardized treatment. About 900-1200 cases of poisoning (barbiturate, morphine, etc.) are treated there each year. After abandoning the use of analeptics and standardizing supportive therapy, there was a reduction in the mortality from 12 per cent in 1948 to 1.6 per cent in 1951.⁹ A comparable reduction in mortality has been observed at Bellevue Hospital following the change to supportive treatment; the studies of Reed *et al.*,¹⁹ seem to indicate that careful attention to supportive care, and perhaps more careful use of analeptics, resulted in a decrease in mortality from 13.4 to 5.5 per cent. However, it is apparent that even the latter figure is higher than that reported by Nilsson (3.4 per cent in 87 "severe" cases). Thus it seems reasonable to suspect the use of analeptics, *per se*, as a factor in the relatively higher mortality rate associated with this form of treatment.

In view of the present data indicating conservative treatment to be the most effective means of managing barbiturate intoxication, there are some disconcerting remarks in the literature deserving of comment. Statements to the effect that picrotoxin and Metrazol are the most effective agents in the management of barbiturate intoxication^{15,18} and the corollary, that the physician who does not use them "and depends on merely non-specific general supportive therapy takes a great deal of responsibility on himself,"¹⁴ are prime examples.

The assumption that central stimulants are the most effective treatment carries with it the danger that less of the physician's attention may be focused on careful supportive therapy, which is of the utmost importance in the care of these patients. Furthermore, there are no convincing data to substantiate the belief that such stimulants are most effective or that they may be life-saving. The more effective, and indeed more physiological, management of inadequate respirations and arterial hypotension involves the use of artificial respiration and of vasopressor drugs (combined with the maintenance of colloid and electrolyte balance). There is no satisfactory evidence that analeptics, including bemegride and amiphenazole, hasten the excretion or detoxification of barbiturates.^{23,24} Furthermore, administration of analeptics, which increase the oxygen needs of the central nervous system,^{27,28} may cause tissue hypoxia, thus increasing the possibility of anoxia. These objections leave little doubt that the use of central stimulants add little, if anything, to a program of well-directed conservative treatment. The services of an anesthetist and recovery room personnel are valuable in carrying out this conservative form of treatment.

SUMMARY

A case of severe barbiturate poisoning treated by general and specific supportive measures is presented with a review of the literature. Patients with this type of poisoning can be, and perhaps should be, treated without analeptics.

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489 State Street, Bangor

SPECIAL ARTICLE

I Am In Favor Of Social Security For Physicians

GEORGE O. CUMMINGS, SR., M.D.,

If 70,000,000 Americans are already under Social Security, it seems foolish for physicians to stay out. If you can't lick them — join them.

I am interested in securing Social Security for physicians.

I am 66 years old and will not benefit from Social Security unless I can work six quarters.

I receive \$135 a month from an annuity with the John Hancock Insurance Company which cost me \$500 a year for 25 years, a total of \$12,500. If Social Security had been instituted 25 years ago, I would have paid in a total of \$5,496.75 and I would receive at the age of 65, \$162.80 each month for myself and my wife.

Under my annuity, if I die, my wife will receive a lump sum, the unpaid balance of the principal. Under Social Security, she would receive for life, \$81.40 a month if she started to receive payments at the age of 62, and \$108.50 a month if she started payments at the age of 65.

Social Security is the cheapest protection that you can buy for you and your wife.

The following quotation is from a pamphlet "Nine Sound Reasons," published by the Committee on Social Security for Physicians, The Physicians Forum, 510 Madison Avenue, New York 22, New York. Anyone who desires more information should obtain the pamphlet from them. It is clear and brief.

- 1. Old Age and Survivors Insurance (OASI) offers better value for your insurance dollar than any private company in the United States. It provides three-way coverage — life insurance, disability benefits and retirement income. To get the same benefits from private companies can cost from \$6,500 to \$25,000 more.
- 2. Among the 70,000,000 Americans under Social Security are dentists, lawyers and other self-employed professionals; bank presidents and business executives in top-income brackets; physicians employed by hospitals, medical groups and private industry. Why should self-employed physicians be excluded?

- 3. OASI coverage requires no physical examination. No one is excluded or asked to pay higher premiums because of existing disability, ill health, occupational hazard or advanced age.
- 4. OASI benefits are entirely tax free, and are paid without regard to income derived from investments, private insurance or annuities. These benefits could provide a substantial foundation in planning your family's security.
- 5. OASI contribution rate is uniform for all self-employed persons, regardless of other income or age. You pay a fixed rate only on the first \$4,200 of earned income. For years 1957-1959, the rate is 3 3/8% — or a maximum of \$141.75 annually.
- 6. For the young doctor, survivor's benefits of OASI are especially important. In the event of his death, his widow and children under age 18 receive a maximum of \$200 a month.
- 7. For the older doctor (including those practicing at age 65 or over), OASI retirement benefits are a

COST OF RETIREMENT BENEFITS UNDER OASI*
COMPARED WITH PRIVATE INSURANCE COMPANIES
(For husband and wife)

If you enter OASI in 1958 at age of	You would pay OASI taxes totaling (by age 65)	Same benefits from private companies cost you at least	Your loss because of exclusion from OASI
30	\$8,174.25	\$14,700	\$ 6,525.75
35	6,835.50	16,300	9,464.50
40	5,496.75	18,000	12,503.25
45	4,158.00	19,900	15,742.00
50	2,882.25	22,000	19,117.75
55	1,764.00	24,400	22,636.00
60	803.25	26,000	25,196.75

*Cost of OASI also covers survivors insurance and disability.

welcome addition to his retirement income. At age 72, he would get full benefits, regardless of his earnings. At age 50 or over, retirement benefits are now provided for the completely disabled.

8. Roughly 35 per cent of all self-employed physicians listed in the AMA Directory have at least some credited earnings under OASI, according to a sample survey by OASI in 1955. They acquired these credits either before entering private practice or by part-time employment while in private practice. Also, physicians who served in World War II are entitled to OASI credits. These credits may be lost or the benefits curtailed unless self-employed physicians are included under the Social Security law.
9. OASI benefits have been adjusted to cushion the effects of inflation. In 1940, maximum monthly benefits for an individual were just over \$40. Today, they are \$108.50 — an increase of more than 150 per cent! Private insurance companies have not kept pace with inflation.

Following is copy of a letter with a more intimate appeal.
Dear Doctor:

If the Cumberland County Society does not favor Social Security, they have taken away \$162.80 a month or \$1,953.60 a year from physicians and their wives, who for one reason or another have been unable to continue practicing after the age of 65, or have taken away \$108.50 a month or \$1,278 a year from every physician over 50 who has been

unfortunate enough to have to retire from practice for disability.

Under Social Security, a physician would collect under above conditions provided he earned less than \$80 a month despite the fact that he might have unlimited income from rents, interest, dividends, annuities or from other sources.

Most physicians are able to save little, and however it seems to a young squirt like you, age presses on, even I was a young squirt once. The wise squirrel lays up nuts for the long, cold winter.

Life insurance is entirely another affair as is Blue Cross, accident and health insurance and annuities. The fact that you have provided for your family is wonderful, but you might get disabled after 50 or you might live and stop practice after 65. Social Security is in the way of being a savings account or an annuity.

As a result of the New Deal, the dollar was devalued, Income Tax increased, and the possibility of saving enough in your earning years to take care of your old age diminished. Social Security was developed to bridge the gap.

Any physician over 72, regardless of what he earns, would receive full benefits.

The soundness of the Social Security program has been repeatedly attested by economists and insurance experts. The U. S. Chamber of Commerce is a strong supporter of Social Security.

President Eisenhower has said, "The System is not intended as a substitute for private savings, pension plans and insurance protection. . . ."

You may obtain further information by writing:

Committee on Social Security for Physicians
The Physicians Forum
510 Madison Avenue
New York 22, New York

Very respectfully,
GEORGE O. CUMMINGS, M.D.

47 Deering Street, Portland

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The Journal of the Maine Medical Association

DANIEL F. HANLEY, M.D., Brunswick, Editor

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Across The Desk

Senate Committee May Include Jenkins-Keogh in Omnibus Bill

The Jenkins-Keogh plan for tax deferment on retirement funds paid by the self-employed may be made a part of an omnibus tax relief bill for small business. The idea is under consideration by a tax subcommittee of the Senate Small Business Committee which is continuing regional hearings on general tax problems for the small businessman and the self-employed. It is planned to have a committee bill reported out and ready for floor action by late January.

While tax measures are supposed to originate in the House, the omnibus bill under study could be attached as an amendment to any House-passed tax bill that comes to the Senate. After passage by the Senate, it would go to conference if the House asked for such conference. No further hearings would be required under the procedure. However, by then, the House Ways and Means Committee would have covered the ground in its general tax hearings opening January 7 and running through February 7.

The American Thrift Assembly is pushing for enactment of Jenkins-Keogh legislation in the interest of 10 million self-employed. Unlike employees of corporations and associations, they cannot set aside retirement funds with a deferment of taxes.

PHS Advises Against Community-Wide TB X-Ray Campaigns

Public Health Service, acting on advice of a committee on medical and public health leaders called in to re-evaluate recent changes in the nature of the tuber-

culosis problem, is recommending against community-wide chest X-ray campaigns for detection of TB. Instead PHS recommends that communities use tuberculin skin testing as a first step in case-finding, followed up with X-ray examinations for those with positive reactions.

The service suggests, that X-ray examinations be continued on selective groups, those with greatest risk, such as persons confined to hospitals and other institutions, low-income groups, migrant workers and people known to have been exposed to the disease. It was emphasized that groups to be given X-rays should be selected locally, with the choice based on the local tuberculosis problem, the expected yield of new cases and the adequacy of diagnostic and treatment facilities and of follow-up services.

One factor given consideration in reaching the decision, PHS says, is "the problem of low-level radiation exposure from X-rays." To further reduce radiation exposure, both of the operators and the public, PHS urges periodic inspection of all X-ray equipment, and installation of further protective devices where indicated.

Of the new tuberculosis picture, PHS says: "In the last 15 years . . . the tuberculosis problem has changed radically. Some areas of the country are now practically free of active cases of the disease. In other areas, tuberculosis continues to be a serious problem, particularly among certain groups. While the number of active cases has declined almost 30 per cent in the last five years, it is estimated that there are still about 250,000 persons with active tuberculosis in the United States today."



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- Lowest Oral Dose In Sulfa History—0.5 Gm. (1 tablet) daily in the usual patient for maintenance of therapeutic blood levels
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NEW DOSAGE. The recommended adult dose is 1 Gm. (2 tablets or 4 teaspoonfuls of syrup) the first day, followed by 0.5 Gm. (1 tablet or 2 teaspoonfuls of syrup) every day thereafter, or 1 Gm. every other day for mild to moderate infections. In severe infections where prompt, high blood levels are indicated, the initial dose should be 2 Gm. followed by 0.5 Gm. every 24 hours. Dosage in children, according to weight; i.e., a 40 lb. child should receive ¼ of the adult dosage. It is recommended that these dosages not be exceeded.

TABLETS: Each tablet contains 0.5 Gm. (7½ grains) of sulfamethoxypyridazine. Bottles of 24 and 100 tablets.

SYRUP: Each teaspoonful (5 cc.) of caramel-flavored syrup contains 250 mg. of sulfamethoxypyridazine. Bottle of 4 fl. oz.

1. Nichols, R. L. and Finland, M.: *J. Clin. Med.* 49:410, 1957.

The committee that advised PHS to make the recommendations was composed of: Drs. Russell H. Morgan, chief radiologist, Johns Hopkins University Hospital, and special consultant to the surgeon general on the public health aspects of radiation; Ralph Dwork, director of health, Ohio State Department of Health; Floyd Feldman, medical director, National Tuberculosis Association; Joseph Stocklen, tuberculosis control officer, Cleveland and Cuyahoga County Health Department.

Monkey Trials Reveal Chlorpromazine Perils

Additional evidence of potential hazards of chlorpromazine therapy has been gathered by a National Mental Health Institute research team at the Public Health Service Hospital in Lexington, Kentucky. Drs. Carl Essig and Woodrow W. Carter have filed a report describing effects of high dosages of chlorpromazine on rhesus monkeys.

Four monkeys were put on a gradually increasing dosage schedule. At doses of 44 to 77 mg. per kg. of body weight per day, the animals suffered convulsive seizures. Investigators pointed out that this drug intake is roughly comparable to 3,400 mg. in one day for human beings, a dosage which has been reported by at least one clinic.

PHS Orders Potential "Anticancer Compounds"

Public Health Service has contracted with six research organizations for production of new potential anticancer compounds, antimetabolites and hormonal substances, both of which in various ways are known to hinder the growth of cancer cells. The chemicals to be synthesized will be tested against three types of animal tumors, and if any of them show promise they will be used clinically in hospitals cooperating with the National Cancer Institute. A total of \$793,000 will be spent on the contracts, to be administered by the Institute's Cancer Chemotherapy National Service Center.

Tax Ruling Reversed on Medical Groups' Status

Action of Internal Revenue Service in reversing its own 1956 ruling dealing with group medical suits may be to smooth road for passage of Jenkins-Keogh pension plan. The chronology: In January, 1956, IRS ruled that doctors who form an association with idea of obtaining corporate status benefits — including eligibility of member physicians to subscribe to tax-deferred pension plans — constitute a partnership and so they are disqualified for such plans, which are for employees and not employers or partners.

This ruling went counter to the Federal court decision earlier which held that the association operating Western Montana Clinic fulfilled criteria of a corporation, for tax and pension plan purposes.

For nearly two years, tax headquarters in Washington was in the painful position of having to explain over and over again why the doctors in the Montana group

could utilize Sec. 401 (a) of Internal Revenue Code — because court said so — while other medical groups administered in identical manner could *not* do so — because IRS said so. Now IRS is "modifying its position," to use its own words.

New policy: Fact that a medical group sets up a pension plan under 401 (a) will *not* be determinative in categorizing the organization as a partnership. Basic criteria, which will hinge on the group's pattern of organization and administration, to be used in making final determination will be published at a later date.

Folsom Health Aide Lists Medical Needs, Cites Problems of Aged

Secretary Folsom's special assistant for health and medical affairs, Dr. Aims C. McGuinness, has outlined some major health items which may serve as the framework of the administration's health goals for the 1958 session of Congress. In an address in Waterville, Maine at the dedication of a new chronic disease and rehabilitation facility, Dr. McGuinness made these points:

Health Aid to the Elderly — The principles of voluntary insurance should be applied to the prepayment of medical expenses of a higher proportion of elderly people; the administration feels voluntary health insurance can advance this goal most effectively. PHS also plans to develop demonstrations of home-care services, health maintenance clinics and restorative services. (Several bills now in Congress would offer hospitalization to OASI beneficiaries.)

Hospital Care Costs — Physicians must constantly ask themselves if they are putting a patient in a hospital when he could be served as well or better on an ambulatory basis. It is essential the problem of rising hospital care costs be solved.

Rural Health — In the more rural areas where hospital facilities might not be available at all, the most essential health services could be provided through diagnostic and treatment centers. (Several proposals have been made for Hill-Burton-type grants for clinics separate from hospitals. Under present law diagnostic and treatment centers must be owned by a state, political subdivision or public agency, or by a corporation or association that owns and operates a nonprofit hospital.)

Hospital Role in Medicine — General hospitals must broaden their services and achieve greater coordination. The term "hospital care" should include not only bed care but diagnostic service and service to ambulatory patients as well.

Federal Medical School Aid — Failure to help meet the needs of medical schools would be the worst kind of false economy. The administration's pending \$225 million program of construction grants would bring classrooms and laboratories much closer to current and projected needs.

Cigarettes Are Harmful, Federal Official Holds

Earlier this year, Public Health Service put its stamp

of disapproval on cigarette smoking. Now an official of another Federal agency as similarly indicted cigarettes as a health hazard. Federal Trade Commission discloses that a hearing examiner has ruled against validity of advertising claims by a tobacco company that cigarettes have no adverse effect on nose and throat "and accessories."

The examiner noted that all medical and other expert testimony presented in this case was in agreement that cigarette smoke is an irritant and capable of insult to nose, throat and connecting organs. Witnesses differed only as to *degree* of danger, he stated. Note: A hearing examiner's ruling is not binding on the Commission itself.

Reforms Urged in Public Health Grants to States

Federal grants-in-aid to the states for improvement of public health services would pay bigger dividends if certain administrative reforms were adopted. This is the opinion of Dr. Herman E. Hilleboe, as expressed earlier this month to Intergovernmental Relations Subcommittee of House Committee on Governmental Relations. His testimony at the New York hearing was given in his dual capacity as State Commissioner of Health and vice-president of State and Territorial Health Officers Association.

Dr. Hilleboe recommended: (1) Greater stability of Federal aid, with no sudden terminations of assistance and provision of two-year periods of grace before reduction of grants; (2) more flexibility in use of funds so as to meet changing local situations and cut down record keeping; (3) research directed at modernizing formula design for health grants.

Veterans "Home" Care

Veterans Administration is considering abolition of annual contracts with medical societies for provision of "home town" medical care services and substitution of letters of agreement having no terminal date (with less paperwork and other minutiae).

Supreme Court Refuses Review of Medical Cases

Five cases involving doctors or medical questions were denied review by U. S. Supreme Court recently. They were as follows:

Richard Douglas Furnish, M.D., vs. California Board of Medical Examiners, in which a physician sought to overturn this year's suspension from practice, following conviction of income tax evasion on a plea of *nolo contendere*.

Robert H. Reddick, M.D., vs. State of Maryland, in which the issue boiled down to homeopathy vs. allopathy, with the former losing.

Stanley G. Bandeen, D.O., vs. Kentucky State Board of Health, somewhat similar to the Reddick Case, in which petitioner contested revocation of his license to practice osteopathy.

Floyd E. Kidd vs. Merck & Co., in which a \$50,000

damage suit was filed on ground that viral infectiveness of blood plasma rendered it a "filthy" substance within meaning of Tennessee's food and drug law.

Constance A. Stopper vs. Manhattan Life Insurance Company of New York, in which the insurer denied liability, except for return of premiums, on ground that a policy-holder made fraudulent representations of physical condition. (He died and his widow tried to collect).

PHS Committee Opposes Mass Vaccinations with BCG

After studying the advantages and disadvantages of BCG vaccine to control tuberculosis, a special Public Health Service Committee recommends against mass vaccination campaigns, proposing instead that vaccinations be limited to special situations where exposure to the disease is unusually high and where other means of control are inadequate. The committee concluded that vaccinations should be limited to:

1. Physicians and other medical personnel working in hospitals with inadequate tuberculosis control programs.

2. Families with whom a member infected with tuberculosis must reside.

3. Those associated with institutions in which exposure is known to be high, such as certain mental hospitals and prisons.

The committee gave weight to arguments that because persons vaccinated with BCG have a permanent positive reaction to testing, testing and case-finding surveys are made difficult. It also pointed out that vaccination campaigns would occupy the time of persons trained in TB control work, who in the committee's opinion, could be more profitably employed in other directions.

In releasing the report, PHS comments:

"BCG has been used in tuberculosis immunization for more than 30 years, and has had broad acceptance in certain European nations. There has been and still is wide variance of opinion as to its precise value, even in some of the countries that have been using BCG vaccine for many years. . . . The committee points out that studies have shown the effectiveness of BCG ranges from 0 to 80%. Because of this wide range, the committee recommends against large-scale vaccination programs in this country."

Health Insurance Pushed for Government Employees

On one health front, at least, the Administration seems to have made up its mind on legislative action to be sought in 1958. Chairman Harris Ellsworth of Civil Service Commission states that contributory health insurance for Federal workers and dependents should be — and, he thinks, will be — enacted by Congress next year.

Meantime, the Commission last week issued No. 2

in its new series of fact sheets which are designed to win friends for idea of contributory coverage by answering questions about costs, benefits and limitations. Note: Adoption of this fringe benefit was recommended last week in report of Committee on Scientists and Engineers for Federal Government Programs. It was called a recruitment aid that would put U. S. in a better competitive position in attracting scientists and engineers.

SBA Loans Sought by Few MD's and Dentists

More than three months ago, your correspondent disclosed intention of Small Business Administration to extend eligibility for loans to physicians, lawyers, engineers and other engaged in the professions (WRMS No. 524). At SBA it was thought there would be brisk demand for Federal financial aid to buy equipment, remodel or furnish offices, etc. So far, though, applications have been few and far between.

At the close of August, only 10 applications had been received from people in health professions and none had received approval. Three doctors of medicine, five dentists, one osteopathic physician and one chiropractor comprised the group.

Penicillinase Effective

Three papers on the program attested effectiveness of penicillinase as antidote for allergic and other reactions following use of penicillin. An injectable purified product still in experimental stage, it is expected to be released soon to medical profession under name of "Neutrapen" (Schen-Labs Pharmaceuticals, Inc.). Papers giving strong support to the enzyme's characteristics in hydrolyzing and inactivating penicillin were based on clinical and laboratory trials at Marquette and Univ. of Sou. California Schools of Medicine and Madison (Wis.) General Hospital.

Progress Reports Heard by Roentgen Ray Society

About 2,000 physicians attended 58th annual meeting of American Roentgen Ray Society in Washington the first week in October. They listened to papers which deprecated and disputed reports that persons exposed daily to very small doses of radiation are shortening their lives; described improvements in making x-ray films; gave directions for a new diagnostic method of pin-pointing elusive stomach ulcers, and presented additional evidence of radiology's mounting usefulness in diagnosis and treatment.

Dr. Peter J. Kerley, of London, said x-ray pictures of the lungs may yield a reliable clue to impending cardiovascular conditions.

On the basis of 344 cases of selective angiocardio-graphy, benefits were such as to indicate greater utilization of this procedure, which the speaker — Dr. Bernard J. O'Loughlin, of Los Angeles — characterized as relatively safe.

Radiologic findings in the pelvis can furnish conclusive evidence more than 80 per cent of the time in

diagnosing mongoloidism, Dr. John Caffey, New York, reported.

No Draft of Doctors for 20 Months Likely

It is highly improbable that White House will be asked by armed forces to call up any physicians through Selective Service before July, 1959. All that is needed to make this a virtual certainty — barring outbreak of war — is a repetition of what happened a year ago, when Reserve commissions were granted to 75 per cent of the recent graduates who indicated willingness to start military service following internship training or to accept residency deferments. In recent weeks, 2,904 have assented to commissioning. Acceptance of 2,178 ($\frac{3}{4}$) of that number would obviate need for any involuntary callup of physicians in the 1958-59 fiscal year.

AMA Urges Special Channels for Physician Emergency Use

The American Medical Association has formally recommended that the Federal Communications Commission set aside six radio channels nationwide for emergency use of physicians. AMA also endorsed use of several channels for non-commercial FM educational broadcast stations. The proposed channels all would be in the vicinity of 161 megacycles in the radio spectrum.

"The association believes that the use of numerous remote pickup broadcast stations in conjunction with non-commercial FM broadcast stations represents an effective method of developing the potential of educational programs," the AMA stated. "To make full utilization of remote pickup broadcast stations as an integral part of broadcast programs, it is essential that adequate clear channel be reserved for these . . . stations."

AMA stressed to the FCC that the present availability of radio communication channels for the medical profession is very limited and that as a result, the value of this medium in the practice of medicine has not been fully realized.

The American Hospital Association also asked for separate frequencies for hospitals and hospital associations. It cited needs for more effective communication with ambulances and automobiles of staff physicians and surgeons, as well as for use in time of disaster.

7 Per Cent of All Hospital Cases are Accidents

Accidents account for about 7 per cent of all cases treated in American hospitals, according to a new survey by the American Medical Association.

Accidents combined with pregnancy, the "other great nondisease category," account for about one-fourth of the total hospital load, according to an editorial in the current A.M.A. Journal.

In this study, the 128,000 patients hospitalized because of accidents comprised 6.9 per cent of all pa-

tients discharged during the month. The average hospital stay for accident patients was 10.7 days as compared with 9.1 days for non-accident patients. The accident cases required the use of 50,500 beds or 6.7 per cent of total beds available.

Diapers Don't Cause Diaper Rash

In spite of its name, diaper rash is not usually caused by diapers, according to an editorial in the *Journal of the American Medical Association*.

Diaper rash is a general term for several types of skin eruptions in the "diaper region."

The commonest cause of a rash is the formation of ammonia by bacteria, after urea is broken down. Other eruptions may be prickly heat, thrush, chafing, allergy and various types of dermatitis.

All of these rashes are aggravated by lack of cleanliness and softening of the skin, which may occur if it remains moist too long. The best preventive for diaper rash is changing the diaper as soon as possible after it becomes wet or soiled. This prevents softening of the skin and the formation of ammonia.

Since plastic or rubber pants increase the likelihood of ammonia formation, their use should be limited to those "brief social occasions when prompt changing would be inconvenient," the editorial said.

Studies have shown that commercial laundering of diapers is much more effective than home laundering in removing and stopping the growth of ammonia-forming bacteria and in removing irritating detergents. The usual commercial process includes three initial warm and hot rinses, two soapings, bleaching and three rinses in hot water followed by two rinses in chemicals which stop the growth of ammonia-forming bacteria.

Although commercial laundering is not essential to

the prevention of diaper rash, the more a home laundering procedure is like that of commercial laundries, the better the protection, the editorial said.

Treatment of diaper rash varies according to the cause, but in any case, the diaper region should be kept dry and warm.

Preventive measures must be continued as long as diapers are worn, the editorial concluded.

Soft Shoes Recommended for Toddlers

Soft shoes which give "barefoot freedom" to babies learning to walk were recommended in an American Medical Association publication.

The article in the October issue of *Today's Health* pointed out that the baby's first shoes may hold the answer to the kind of foot comfort he will have as an adult. If the baby is given "barefoot freedom," which permits the foot to develop naturally, he will probably have comfortable feet when he grows up.

Because normal foot muscles become strong only through use, only a "supple foot covering that permits the utmost freedom of movement" should be worn by the infant and toddler, the article said. If the baby's foot is confined in a shoe which holds any part of it in conformity, even the heel which is usually supported, the foot will become weak and stiff, according to an orthopedic surgeon quoted in the article.

In addition, stiff shoes may handicap him in learning to walk. The article quoted one mother who said her year-old son took his first steps when she put soft shoes on him. In hard-soled shoes, he "just stood there as if he were wearing skates that might topple him any minute — and they did too, for he could not bend his feet to gain his balance."

SALICYLATE POISONING — Continued from page 440

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Dr. Radebaugh, 81 Parkview Avenue, Bangor
Dr. Emery, 242 Cedar Street, Bangor



Concerning Dues

Once again comes that time of year when dues are due again, i.e., 1958 American Medical Association, Maine Medical Association and county society dues are payable January 1, 1958.

This is to serve as notification that statements for these dues will be sent to all active members in the near future.

One statement will cover M.M.A. dues of \$55.00 plus county dues; payment to be made in accordance with instructions on the bill. A card certifying membership in your State and County Society will be sent by your County Secretary on receipt of these dues.

The statement for A.M.A. dues (\$25.00) will be mailed from M.M.A. headquarters to active

members who have paid their 1957 A.M.A. dues. Payment covering these dues *must* be made payable to the American Medical Association and *must* be mailed to the Secretary of the Maine Medical Association — A.M.A. dues include subscription to the J.A.M.A. or one of the specialty Journals published by A.M.A., which will be listed on the statement. At regular intervals a report, which includes a list of paid members and checks covering same, is sent from the M.M.A. to A.M.A. headquarters in Chicago. Membership cards will be sent direct from A.M.A. to each paid member.

Members exempt from payment of State and County dues are also exempt from payment of A.M.A. dues. And a membership card will be sent to each member who is eligible for exemption.

1957 Fall Clinical Session

The Fall Clinical Session of the Maine Medical Association was held in Waterville on October 13, 14 and 15, with sixty-nine members and five guests registered.

The meeting got underway at 5:30 P.M. on Sunday, October 13, when members of the Kennebec County Medical Society were hosts at a social hour, which proved to be a gala occasion. Dinner followed and was in turn followed by a most delightful address by Dean Ernest C. Marriner, Colby College Historian and former dean of the faculty. His reminiscences of long gone members of the medical profession, and of some more recent members, was extremely well done.

The program for this meeting, which was arranged by a committee consisting of Arthur H. McQuillan, M.D., Chairman, George J. Robertson, M.D. and Joseph A. Marshall, M.D. of Waterville, and William B. Grow, M.D. of Fairfield, was sent to all members of the Maine Medical Association prior to the meeting — and it proceeded in all details as scheduled.

Suffice it to say that there were many favorable comments from those present — particularly concerning the speakers on Monday afternoon, October 14; Stuart W. Russell, M.D. of Hanover, New Hampshire and Rudolf Toch, M.D. of Boston, Massachusetts.

Waldo County Member Honored

The Maine Radiological Society, at a recent meeting, voted to provide two annual awards to be named the George W. Holmes Awards, in honor of a Belfast physician.

Dr. Holmes, who was formerly Chief of the Depart-

ment of Radiology at the Massachusetts General Hospital, is an Honorary Member of the Waldo County Medical Society and the Maine Medical Association. Although semi-retired, Dr. Holmes is serving as radiologist at the Waldo County Hospital.



DEAN H. FISHER, M.D.
COMMISSIONER

State of Maine

Department of Health and Welfare

State Plans New Nursing Home Care Program

The majority of Maine physicians have patients who will be affected, either directly or indirectly, by the State's planned nursing home care program for recipients of Public Assistance, which is to be a new responsibility of the Department of Health and Welfare. The program was authorized by the 98th Legislature which made an appropriation of \$500,000.00 for each year of the current biennium, in addition to which, there will be \$150,000.00 available in matching Federal funds.

Physicians are being provided with this advance information regarding the general operation of the program because, not only do they care for numerous patients receiving public assistance, but often families and friends and other interested persons seek their advice regarding various problems of such patients.

Public Assistance is the Federal-State program of cash grants to needy eligible persons in four categories, namely, Old Age Assistance, Aid to Dependent Children, Aid to the Blind and Aid to the Disabled. The majority of the cases involved in the nursing home care program are Old Age Assistance recipients. Many of these persons have no close relatives or friends to aid them in any way, either financially, or in making decisions, and it frequently happens that the physician is asked for advice, information and reassurance.

The program was started, in a limited sense, in September, but as it was soon determined that an upward adjustment in rates was necessary to make its operation more practicable State-wide, it was halted until January. Another complicating factor was that the necessary extra personnel required to administer a program of this type was not available.

Although the rates for the few initial cases paid in September (\$110.00 to \$135.00 per month) were thought to be above the State-wide average for such cases; the actual charges in nursing homes in several counties proved to be more.

Even with the changes planned, it is obvious that the money available will not be sufficient to provide complete nursing home care for all eligible patients. However, numerous physicians who have long pointed out the need for such a program and departmental officials agree that it is a step in the right direction. As an example, the maximum grant in an Old Age Assistance

case is \$60.00 per month which means that supplementation must be made from some source. The new program is expected to relieve, to some extent, the burden on cities and towns, especially in the smaller communities where the costs of supplementing public assistance grants has created a serious financial problem.

It is believed that the majority of physicians are familiar with the basic regulations which require the Department to consider income from all sources in order to determine whether or not a person, otherwise eligible, is entitled to an assistance grant. It is not proposed to discuss these regulations in this article but it would help if physicians would keep in mind the fundamental requirements of established standards by which the public assistance program must be administered in order to secure the necessary matching Federal funds and to conform with both Federal and State laws.

In brief, this might be summed up as a requirement that all persons receiving assistance grants receive equal treatment. The procedure provides for the establishment of standard allowances for various items such as food, utilities, board etc. The addition of nursing home care for eligible recipients in any of Maine's 200 licensed homes also requires the establishment of a standard allowance or rate for this need.

The amount paid to a recipient is determined by a planned and uniform system of standard allowances which, of course, must relate to the legislative appropriation. State appropriations represent the level which, in the opinion of the Department, the people of Maine wish to provide for those dependent upon public funds. The legislative appropriation also automatically determines the amount of matching Federal funds, for these are provided to the states on a percentage formula basis which need not be detailed in this particular article. However, it should be kept in mind that Federal auditors and Federal officials and representatives of the United States Department of Health, Education and Welfare are constantly checking the validity of the programs and of payments, and any substantial loss of Federal funds could prove disastrous to the overall public assistance program. Such a loss could result from payment to an ineligible person.

A detailed summary of the nursing home situation in

Maine, with emphasis on the importance of properly operated homes as a medical resource was published in the March (1957) issue of the Journal of The Maine Medical Association. Details of the program are being

developed in cooperation with the Maine Association of Nursing Homes. The plan provides for medical determination, when necessary, as to whether or not a recipient requires skilled nursing service in a nursing home.

Timely Filing Of Death Certificates Paramount

A human death must be associated with a certain amount of record-making and keeping. The physician is the only one who can be responsible for basic essential information, and, by law, it is he who must initiate the filing of the death certificate. Immediate preparation of this certificate is of the greatest importance, since a completed death certificate is a requisite for the burial of the deceased.

Failure to provide this certificate promptly has delayed and upset plans for burial, added unnecessarily to the anguish and unhappiness of families and has caused resentment toward and poor public relations for physicians.

The laws of Maine require that the funeral director in charge must secure a burial-transit permit from the city or town clerk at the place of death and must present this permit to the sexton of the cemetery before burial can take place. This law is common to all parts of the United States.

In order to secure a burial-transit permit the funeral director must present a completed death certificate to the city or town clerk. Should the funeral director fail to secure a permit through his own negligence, or should he be unable to secure one because he cannot obtain a completed death certificate, the sexton must refuse to permit the deceased to be buried. If he were to permit burial without a proper permit he would be committing a misdemeanor and could be fined up to \$100.00.

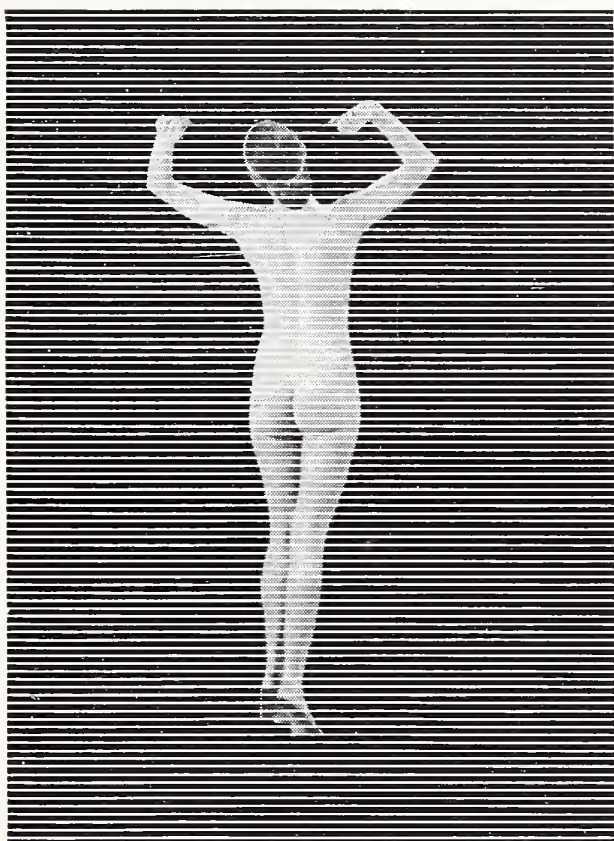
Examination of death certificates seems to indicate that the completion of the medical certification of the

cause of death is fairly routine in the majority of deaths and need occasion no delay. In some cases, however, the physician may not wish to rely strictly on clinical judgment in preparing the certificate, but may wish to supplement his knowledge by means of autopsy findings. In these cases the physician should complete the medical certification using his best clinical judgment and note on the certificate that an autopsy is pending. It will then be possible to supplement the information on the certificate at a later date. In those cases where the physician is unwilling to make a clinical judgment as to the cause of death he may simply sign the certificate and make a notation that the cause of death will be provided when autopsy findings are available. The certificate may then be filed and supplemented at a later date. This will relieve the physician of his immediate responsibility for furnishing medical information for the certificate.

To assure prompt filing of certificates it is suggested that each physician keep a few certificate blanks in his bag. They may be obtained from any city or town clerk. It is further suggested that certificates be completed as soon as possible and left with the funeral director or with the family of the deceased. If this is not possible, the physician may leave the certificate in his own office where it may be immediately available to the funeral director. The law requires that this must be done within 24 hours after death.

If there is any question on the part of the physician as to proper procedures in any case, he may contact the State Registrar of Vital Statistics.

CHEMOTHERAPY PLUS FLORA CONTROL

Floraquin[®]Destroys Vaginal Parasites
Protects Vaginal Mucosa

Vaginal discharge is one of the most common and most troublesome complaints met in practice. Trichomoniasis and monilial vaginitis, by far the most common causes of leukorrhea, are often the most difficult to control. Unless the normal acid secretions are restored and the protective Döderlein bacilli return, the infection usually persists.

Through the direct chemotherapeutic action of its Diodoquin[®] (diiodohydroxyquin, U.S.P.) content, Floraquin effectively eliminates both trichomonal and monilial infections. Floraquin also contains boric acid and dextrose to restore the physiologic acid pH and provide nutriment which favors regrowth of the normal flora.

Method of Use

The following therapeutic procedure is suggested: One or two tablets are inserted by the patient each night and each morning; treatment is continued for four to eight weeks.

Intravaginal Applicator for Improved Treatment of Vaginitis

This smooth, unbreakable, plastic device is designed for simplified vaginal insertion of Floraquin tablets by the patient. It places tablets in the fornices and thus assures coating of the entire vaginal mucosa as the tablets disintegrate.

A Floraquin applicator is supplied with each box of 50 tablets. G. D. Searle & Co., Chicago 80, Illinois. Research in the Service of Medicine.

SEARLE

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Secretary, Donald L. Anderson, M.D., Lewiston

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Secretary, John D. Denison, M.D., Patten

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County Society Notes

AROOSTOOK

October 16, 1957

The fall meeting of the Aroostook County Medical Society was held at the Northland Hotel in Houlton on October 16. A social hour was followed by dinner which was served to the following: Dr. and Mrs. Melvin Aungst, Dr. and Mrs. Charles Burr, Dr. and Mrs. Arthur Carton, Dr. and Mrs. John Denison, Dr. and Mrs. Penry Ebbett, Dr. and Mrs. Gerald Donahue, Dr. and Mrs. Robert Gabrielson, Dr. and Mrs. George Harrison, Dr. Eugene Gormley, Dr. and Mrs. I. Mead Hayward, Mrs. Chester Hogan, Dr. and Mrs. Frederick Gregory, Dr. H. Douglas Collins, Dr. Gordon Johnson, Dr. John Madigan, Dr. and Mrs. George Mock, Dr. and Mrs. Samuel Rideout, Dr. Clyde Swett, Dr. and Mrs. John Webber, Dr. Frederick Vogell and Dr. G. Ivan Wilson.

At the request of Melvin Aungst, M.D. of Fort Kent, President of the society, Penry Ebbett, M.D. of Houlton, presided at the opening proceedings. Dr. Ebbett spoke in appreciation of the work done by Clyde I. Swett, M.D., of Island Falls, during his fifteen years as secretary of the society. A plaque, expressing the society's appreciation, was presented to Dr. Swett by Dr. Aungst.

H. Douglas Collins, M.D. of Caribou, was elected to membership in the society.

It was voted that the society go on record as supporting Diabetes Detection Week (November 17-23) and that the President appoint a committee with Samuel Rideout, M.D. as chairman, to work out methods of implementing it in each community. The President appointed the following members to serve with Dr. Rideout on this committee: Harry Helfrich, Jr., M.D., H. Draper Warren, M.D., G. Ivan Wilson, M.D. and Leonid Toussaint, M.D.

Following a lively discussion concerning problems connected with Asian Influenza, it was voted:

1. That Gordon Johnson, M.D., of Houlton, be recommended as County Medical Civil Defense Deputy.
2. That the President appoint a committee to assist Dr. Johnson, to be known as the Civil Defense Committee. (Members appointed to this committee are as follows: Gordon Johnson, M.D., Chairman, Arthur Reynolds, M.D., Henry Kramer, M.D., Melvin Aungst, M.D., Eugene Gormley, M.D., Stephen S. Brown, M.D., John D. Denison, M.D. and Herrick Kimball, M.D.)
3. That the Secretary write a letter to the County Civil Defense Director, Mr. Percy Sargent, informing him of the names of the members of the committee.

Charles Burr, M.D. opened a discussion of problems related to insurance claims and the information demanded by insurance companies, and it was voted that Drs. Burr and Johnson prepare a statement on these problems to give to our delegates to the M.M.A.

It was voted to instruct our delegates that we are opposed to HR 9467; a bill to provide free hospital and surgical care to persons living on OASI pensions.

It was also voted to oppose the exclusion of doctors from Social Security.

The proposed group coverage for members of the M.M.A. under Blue Cross was discussed, and its advantages explained by Dr. Swett.

JOHN D. DENISON, M.D.
Secretary

HANCOCK

October 9, 1957

The October meeting of the Hancock County Medical Society was held at the Hancock House in Ellsworth. There were ten members present.

The meeting was called to order by the President, Robert F. Russell, M.D. of Penobscot.

Donald E. Bridges, M.D. of Bangor, the speaker of the evening, presented a very interesting case of Amniotic Embolism and discussed the history and incidence of this rare condition.

ARTHUR M. JOOST, JR., M.D.
Secretary

LINCOLN-SAGADAHOC

October 15, 1957

The October meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset. There were fourteen members present.

A report on OASI was made by the committee appointed at the last meeting, and it was decided to defer further discussion to the January meeting, when the question of medical and surgical benefits to those receiving OASI will also be discussed.

Area directors for the Diabetes Detection Drive were appointed as follows:

Bath; Richard Clark, M.D.

Boothbay Harbor; Deane Hutchins, M.D.

Damariscotta and Newcastle; George Bostwick, M.D.

Victor DiDomenico, M.D., Chief Medical Resident at the New England Center Hospital, was guest speaker. Dr. DiDomenico's subject was "Evaluation of the Patient as an Operative Risk."

GEORGE W. BOSTWICK, M.D.
Secretary

PENOBSCOT

The October meeting of the Penobscot County Medical Association was held at the Penobscot Valley Country Club. The

speaker of the evening was Derek Denny-Brown, M.D., Professor of Neurology at the Harvard University Medical School, who presented an interesting talk, depicting the clinical importance of cerebro-vascular insufficiency.

John J. Pearson, M.D. of Old Town, presided at the business meeting. Richard C. Wadsworth, M.D., Bangor, described expected problems with Asian Influenza, and stated that 200,000 cases are expected in Maine. He made certain recommendations, including one that all hospital personnel be immunized, and advised the establishment of reporting centers in order to determine the presence of an epidemic.

Edward B. Babcock, M.D., of Bangor, stated that a Diabetes Week will be held November 17 through November 23, and described the program. It was moved and seconded that the association endorse the plan of each doctor doing a clinical test on each patient coming to his office.

Dr. Pearson appointed Drs. Albert C. Todd, William A. Purinton and Magnus F. Ridlon to draw up resolutions on the death of Clarence Emery, M.D.

WARREN G. STROUT, M.D.
Secretary

NEW MEMBERS

AROOSTOOK

H. Douglas Collins, M.D., Caribou Clinic, Caribou

CUMBERLAND

David S. Wyman, M.D., 47 Deering Street, Portland

PENOBSCOT

Francis R. O'Kane, M.D., 122 Penobscot Avenue, Millinocket
Alphonse Telfeian, M.D., Bangor State Hospital, Bangor

DECEASED

ANDROSCOGGIN

J. Emile Poulin, M.D., 194 Lisbon Street, Lewiston, on November 12, 1957

Necrology

HAROLD V. BICKMORE, M.D.
1889 - 1957

Harold V. Bickmore, M.D., 68, of Cape Elizabeth, Maine died suddenly on September 10, 1957.

Dr. Bickmore was born at South Thomaston on February 24, 1889, son of the Rev. Samuel and Wilda Bickmore. He was graduated from Cony High School, Augusta, from Bowdoin College in 1911 and Bowdoin Medical School in 1914. He was a member of Beta Theta Pi and Phi Chi fraternities. He interned at the former Maine Eye and Ear Infirmary before starting practice in Portland.

He was a member of the Cumberland County Medical Society, the Maine Medical Association, the American Medical Association and the Portland Medical Club. He was a member of the staff of the Maine Medical Center, medical

director of the Associated Hospital Service of Maine, and at the time of his death, county physician. A Fellow of the American College of Physicians, he also had a certificate from the American Board of Internal Medicine.

During World War I, Dr. Bickmore was a captain in the Army Medical Corps. He joined Ralph D. Caldwell Post, American Legion, and later the Cape Elizabeth Post. He was a member of the Innominate Club and the Bowdoin Club.

Dr. Bickmore, who was active in Masonic circles, was a member of the Supreme Council, 33rd Degree Masons.

He is survived by his widow, the former Doris G. Griffin, a son, Harold V. Bickmore, Jr., South Portland, and a daughter, Mrs. Joseph J. Flaherty, Kittery.

Tuberculosis Abstract

Female genital tuberculosis has been treated solely by chemotherapy; however, it is difficult to determine cure without pathological specimen available and with continuous chemotherapy local spread of minimal disease has been reported. No patients with this disease should be operated upon without a three-months' pre-operative course of antituberculosis drugs. The minimal operative procedure should be bilateral salphingectomy followed by close observation and a twelve-month course of antimicrobial therapy.

Schaefer, George: Editorial — *Treatment Of Female Genital Tuberculosis*: American Review of Tuberculosis and Pulmonary Disease: 75:501-505: 1947.

Announcements

Pineland Hospital And Training Center Pownal, Maine

Carl Hedin General Hospital — Red Room

- December 4
Lecture — "Encephalitis and Meningitis" 11:00 a.m.
December 11
Lecture — "Embryopathy" (No infection) 11:00 a.m.
December 18
Lecture — "Embryopathy" (Infection) 11:00 a.m.
December 19
Clinical Pathological Conference — Death
Review and Microscopic Demonstration 11:00 a.m.

American Board of Obstetrics and Gynecology

The Part I Examinations of the American Board of Obstetrics and Gynecology, are to be held in various parts of the United States and Canada, on Thursday, January 2, 1958, at 2:00 P.M.

Candidates notified of their eligibility to participate in Part I must submit their case abstracts within thirty days of notification of eligibility. No candidate may take the Written Examination unless the case abstracts have been received in the office of the Secretary. Candidates re-submitting cases must send them in by November 1, 1957.

Current Bulletins outlining present requirements may be obtained by writing to the Secretary's office.

ROBERT L. FAULKNER, M.D.
Secretary-Treasurer
American Board of Obstetrics
and Gynecology
2105 Adelbert Road
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Vacancies for Medical Consultants

The Bureau of Old-Age and Survivors Insurance, Social Security Administration, has announced vacancies for full-time and part-time Medical Consultants in its Division of Disability Operations. The Division is responsible for making determinations of disability under the disability insurance provisions of the Social Security Act. These positions are available in the headquarters offices in Baltimore, Maryland.

The full-time positions are under Civil Service and incumbents will receive all Federal Civil Service benefits such as retirement, life insurance, and vacation and sick leave privileges. The salary range is \$10,065 to \$11,395 a year depending on the individual's qualifications. The salary in part-time positions is paid on a per diem basis.

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evidence submitted the extent of medical disability and degree of loss of physical and mental capacity; determining the need for additional medical evidence; developing medical standards for evaluating disability; liaison with professional medical groups; assisting in staff training programs; and participating in studies and reports on medical aspects of the administration of the disability program. Incumbents may from time to time make visits to State agencies making disability determinations under agreements with the Federal Government, for consultation with physicians in these agencies. Medical Consultants do not perform examinations of disabled applicants. All necessary medical evidence of disability is secured from the applicant's physician or through examinations performed by other physicians.

An article describing in greater detail the basic medical aspects of disability insurance operations under the Social Security Act may be found in the January 15, 1955, issue of the *Journal of the American Medical Association*, pages 270 and 271. Copies of this article are available on request.

These positions, in Baltimore, Maryland, afford excellent opportunities for participation in clinical work and study in the city's nationally recognized hospitals.

Physicians interested in either full-time or part-time positions may write to Dr. Arthur B. Price, Chief Medical Consultant, Division of Disability Operations, 200 West Baltimore Street, Baltimore 1, Maryland, for further information.

**Fifth International Congress on Diseases
of the Chest**

The Fifth International Congress on Diseases of the Chest, sponsored by the American College of Chest Physicians, will

be held in Tokyo, Japan, September 7-11, 1958. The Congress will be presented under the Patronage of the Government of Japan and the Japan Science Council. The Congress has been endorsed by the Japan Medical Association.

Scientific papers, panel discussions, fireside conference and motion pictures will include the following subjects:

- Radiation Hazards
- Coronary Disease
- Occupational Diseases of the Chest
- Benign and Malignant Chest Tumors
- Tuberculosis
- Cardiopulmonary Function Studies
- Asthma and Emphysema
- Cardiovascular Surgery
- Effect of Jet Air Travel in Chest Disease
- Bronchoesophagology
- Tropical Diseases of the Chest
- Etiology of Lung Cancer
- Pediatric Cardiology
- Metabolic Disorders
- Miscellaneous Topics on Chest Diseases

The registration fee for each physician attending the Congress is \$25.00 (U.S. currency) and \$10.00 for each family member accompanying the physician.

The American College of Chest Physicians has a membership of over 6,000 physicians representing 86 countries and territories throughout the world.

For additional information, please write:

Mr. Murray Kornfeld, Executive Director
American College of Chest Physicians
112 East Chestnut Street
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Supplement to

The Journal of the Maine Medical Association

Volume 48, Number 7

July, 1957

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Sowles, Horace K.	R.F.D. No. 1, Cumberland Center
Spencer, Jack	31 Deering St., Portland
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Stephenson, Richard B.	131 State St., Portland
Stevens, Theodore M.	148 State St., Portland
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Storer, Daniel P.	12 Deering St., Portland
Sylvester, Stanley B.	1377 Washington Ave., Portland
Tabachnick, Henry M.	110 Park Ave., Portland
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Tetreau, William J.	131 Chadwick St., Portland
Thaxter, Langdon T.	31 Deering St., Portland
Thompson, Philip P., Jr.	704 Congress St., Portland
Titherington, John B.	209 State St., Portland
Tougas, Raymond A.	8 Cumberland St., Brunswick
Ventimiglia, William A.	131 State St., Portland
Ward, John V.	131 State St., Portland
Weaver, Michael L.	32 Federal St., Brunswick
Webber, Isaac M.	29 Deering St., Portland
Weeks, DeForest	158 Pleasant Ave., Portland
Wellington, J. Foster	655 Congress St., Portland
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Zolov, Benjamin	296 Congress St., Portland

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Foster, Albert D.	Bay Shore Drive, Falmouth Foreside
Haskell, Alfred W.	142 High St., Portland
Jamieson, James G. S.	(No address)
Moore, Roland B.	201 State St., Portland
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Rowe, Daniel M.	169 Front St., South Portland

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Covert, Stanley B.	Kingfield
Duffy, Wallace H.	100 Main St., Farmington
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Fichtner, Paul A.	6 Pleasant St., Rangeley
Floyd, Paul E.	2 Middle St., Farmington
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	Winter—111 E. 75th St., New York, N. Y.
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White, Verdeil O.	North Jay

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Coffin, Silas A.	39 High St., Bar Harbor
Connell, Elizabeth B.	Blue Hill Memorial Hospital, Blue Hill
Connell, John T.	Parker Point Rd., Blue Hill
Cooper, Llewellyn W.	194 Main St., Bar Harbor
Crowe, James H.	121 Main St., Ellsworth
Gray, Philip L.	Blue Hill
Herbert, Walter W.	Eastern Memorial Hospital, Ellsworth
Higgins, Raymond D.	Blue Hill
Hsu, Theodore S.	14 High St., Ellsworth
Joost, Arthur M., Jr.	P. O. Box B, Bucksport
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Kopfmann, Harry	Deer Isle
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Russell, Robert F.	Penobscot
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ACTIVE MEMBERS

Ashley, Alta	State House, Augusta
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|---------------------------|--|--|---|
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| Beckerman, Stanley C. | 82 Elm St., Waterville | Shippee, James N. | 122 Main St., Winthrop |
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| Bourassa, Harvey J. | 15 Silver St., Waterville | Sleeper, Francis H. | State Hospital, Augusta |
| Brann, Henry A. | 31 Western Ave., Augusta | Smith, Kenneth E. | Veterans Administration, Togus |
| Breard, J. Alfred | 15 Summer St., Waterville | Sommerfeld, Kurt A. | 5 Brunswick Ave., Gardiner |
| Bull, Frank B. | 72 Church St., Gardiner | Southern, Edward M. | 2 School St., Waterville |
| Champlin, Frederic B. | Ennion G. Williams Hosp., | Spellman, Francis A. | Veterans Administration, Togus |
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| Cook, Aaron | 23 High St., Waterville | Tashiro, Sabro | |
| Crawford, Albert S. | Box 414, Togus | U. S. Veterans Administration Hospital, Batavia, N. Y. | |
| Crawford, Joseph R. | 105 Water St., Augusta | Towne, Charles E. | 18 Common St., Waterville |
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| Emanuel, Meyer | Veterans Administration, Togus | | |
| English, Lena M. | Veterans Administration, Togus | | |
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| Gingras, Napoleon J. | 6 East Chestnut St., Augusta | | |
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| Goodrich, Blynn O. | 165 Main St., Waterville | | |
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| Guite, L. Armand | 45 Elm St., Waterville | | |
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| Herring, Leon D. | 1 Western Ave., Winthrop | | |
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| Hill, Howard F. | 33 College Ave., Waterville | | |
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| Jackler, Jacob M. | 14 Gilman St., Waterville | | |
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| Lubell, Moses F. | Thayer Hospital, Waterville | | |
| Marquardt, Matthias | State Hospital, Augusta | | |
| Marshall, Joseph A. | 177 Main St., Waterville | | |
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| McLaughlin, Clarence R. | 345 Water St., Gardiner | | |
| McLaughlin, Ivan E. | 345 Water St., Gardiner | | |
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| Melendy, Oakley A. | 21 Western Ave., Augusta | | |
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| Milliken, Howard H. | 105 Second St., Hallowell | | |
| Moore, Arnold W. | State Hospital, Augusta | | |
| Moore, Valentine J. | Thayer Hospital, Waterville | | |
| Morrell, Arch H. | 67 Sewall St., Augusta | | |
| Murphy, Norman B. | 31 Western Ave., Augusta | | |
| O'Connor, Francis J. | 4 Woodlawn St., Augusta | | |
| Ohler, Robert L. | Veterans Administration, Togus | | |
| Pfeiffer, Paul H. | 14 Gilman St., Waterville | | |
| Plimpton, Jay R. | 283 Water St., Augusta | | |
| Pomerleau, Ovid F. | 177 Main St., Waterville | | |
| Pomerleau, Rodolphe J. S. | 27 Main St., Waterville | | |
| Poulin, Albert A. | Sisters' Hospital, Waterville | | |
| Poulin, James E. | 177 Main St., Waterville | | |
| Pratt, Loring W. | 177 Main St., Waterville | | |
| Provost, Helen C. | 48 Green St., Augusta | | |
| Provost, Pierre E. | 48 Green St., Augusta | | |
| Reel, John J. | 59 So. Front St., Richmond | | |
| Reynolds, John F. | 216 Main St., Waterville | | |
| Richards, Lee W., Jr. | 21 Western Ave., Augusta | | |
| Robertson, George J. | 33 College Ave., Waterville | | |
| Runyon, William N. | 283 Water St., Augusta | | |
| Sanders, Stephen W. | 120 Main St., Winthrop | | |
| Saunders, Allen I. | State Hospital, Augusta | | |
| Schmidt, Lorrimer M. | Veterans Administration, Togus | | |
| Sewall, Kenneth W. | 2 School St., Waterville | | |
| | | Bisson, Napoleon | 86 Silver St., Waterville |
| | | McCoy, Thomas C. | 17 College Ave., Waterville |
| | | Newcomb, Charles H. | Clinton |
| | | Priest, Maurice A. | 108 South Stone St., Deland, Fla. |
| | | Risley, Edward H. | 27 College Ave., Waterville |
| | | Shannon, Charles E. G. | 9 Park St., Waterville |
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 42-71 78th St., Elmhurst 73, Long Island, N. Y.

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| Apollonio, Howard L. | 22 White St., Rockland |
| Dennison, Frederick C. | 52 Main St., Thomaston |
| Earle, Ralph P. | Vinalhaven |
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| Hochschild, Hugo | 33 Main St., Thomaston |
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| Jones, Paul A. | Union |
| Kibbe, Frank W. | 22 White St., Rockland |
| King, Merrill J. | 22 White St., Rockland |
| King, Merrill J., Jr. | 22 White St., Rockland |
| Lawry, Oram R., Jr. | 96 Limerock St., Rockland |
| Loewenstein, George | Dark Harbor |
| Mann, David V. | 47 Chestnut St., Camden |
| McLellan, William A. | 87 Chestnut St., Camden |
| Millington, Paul A. | 44 Mountain St., Camden |
| Morse, Edward K. | 22 White St., Rockland |
| Shields, Victor H. | North Haven |
| Soule, Gilmore W. | 22 White St., Rockland |
| Tounge, Harry G., Jr. | 12 Union St., Camden |
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| Waterman, Richard | Waldoboro |
| Worthing, Verla E. | Box A, Thomaston |

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Gregory, Philip O., St. Andrews Hospital, Boothbay Harbor
Hamilton, Virginia C. 900 Washington St., Bath
Hutchins, Deane L. 69 Townsend Ave., Boothbay Harbor
Kinder, Edward L., Jr. 1027 Washington St., Bath
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Smith, Joseph I. 118 Front St., Bath
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Winchenbach, Francis A. 910 Washington St., Bath

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Gilman, Herbert C. 240 Penobscot Ave., Millinocket
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Purinton, William A. 15 Ohio St., Bangor

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 Shapero, Benjamin L. 73 Broadway, Bangor
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 Shubert, William M. 317 State St., Bangor
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 Woodcock, Allan 35 Second St., Bangor
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 Young, Ernest T. P. O. Box 239, Millinocket

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 Weymouth, Frank D. 46 North Main St., Brewer
 Wright, LaForest J. Corinna

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 McNeil, Harry D. 81 Silver Rd., Bangor
 Taylor, Cornelius J. 16 State St., Bangor

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 Knowlton, Henry C. (No address)
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 Theriault, Louis L. 197 Center St., Old Town

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 Lightbody, Charles H. No. Main St., Guilford
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 Stitham, Linus J. 50 Main St., Dover-Foxcroft
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 Grow, William B. Central Maine Sanatorium, Fairfield
 Klutzw, Friedrich W. 152 Main St., Madison
 Laney, Richard P. 50 Water St., Skowhegan
 Lord, Edwin M. 39 High St., Skowhegan
 Philbrick, Maurice S. 292 Water St., Skowhegan
 Reed, Howard L. 68 Water St., Skowhegan
 Smith, Henry F. Jackman Station
 Sorensen, Joseph D. Central Maine Sanatorium, Fairfield
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 Caswell, John A. 16 Waldo Ave., Belfast
 Cobb, Norman E. 132 Main St., Belfast
 Cunningham, Allan R. R.F.D. 4, Belfast
 Read, Seth H. 15 Church St., Belfast
 Stein, Ernest W. 72 Main St., Pittsfield
 Temple, George L. 18 Franklin St., Belfast
 Torrey, Raymond L. Main St., Searsport

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 Tapley, Eugene D. 17 High St., Belfast

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 Stevens, Carl H. 18 Franklin St., Belfast

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Cuneo, Kenneth J.	31 Summer St., Kennebunk
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Mahaney, William F.	338 Main St., Saco
Mazzacane, Walter D.	Old Orchard
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O'Sullivan, William B.	331 Main St., Saco
Ouellette, Marcel D.	114 Main St., Sanford
Patane, Joseph M.	256 Alfred St., Biddeford
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Ross, Maurice	372 Main St., Saco
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Wolfahrt, Eugene P.	338 Main St., Saco

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A

Abbott, Henry W., 116 Main St., Waterville (6)
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 Adams, Lester, 9 Knox St., Thomaston (9)
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 Akerberg, Ake, 1 Park St., South Paris (9)
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 Ames, Forrest B., 255 Hammond St., Bangor (10)
 Amrein, H. Carl, 29 Weston Ave., Madison (12)
 Anderson, Donald L., 369 Main St., Lewiston (1)
 Andrews, John F., 20 West St., Boothbay Harbor (8)
 Ansell, Harvey B., 39 Deering St., Portland (3)
 Anton, Thomas, 260 Main St., Biddeford (15)
 Apollonio, Howard L., 22 White St., Rockland (7)
 Applin, Hilton H., 129 Maine St., Brunswick (3)
 Aranson, Albert, 39 Deering St., Portland (3)
 Armstrong, Charles M., Robbinston (14)
 Asali, Louis A., 29 Deering St., Portland (3)
 Asherman, Edward G., 31 Deering St., Portland (3)
 Ashley, Alta, State House, Augusta (6)
 Aucoin, Peter B., 89 Congress St., Rumford (9)
 Aungst, Melvin R., Morncault Building, Fort Kent (2)

B

Babalian, Leon, 38 Deering St., Portland (3)
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 Babcock, Harold S., Castine (5)
 Bachrach, Louis, 16 Union St., Brunswick (3)
 Bacon, Melvin, 257A Main St., Sanford (15)
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 Baldwin, Warren C., 42 Deering St., Portland (3)
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 Barrows, Harris C., 5 Oak St., Boothbay Harbor (8)
 Bates, James C., Eastport (14)
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 Becaker, Vincent H., 85 Wood St., Lewiston (1)
 Beegel, Paul M., 80 Goff St., Auburn (1)
 Beliveau, Bertrand A., 56 Howe St., Lewiston (1)
 Beliveau, Romeo A., 89 Pine St., Lewiston (1)
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 Bergmann, Jerome W., 255 Western Promenade, Portland (3)
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 Bernard, Romeo A., 26 Beacon St., Lewiston (1)
 Berrie, Lloyd H., 64 Sweden St., Caribou (2)
 Bettie, Ronald A., 32 Federal St., Brunswick (3)
 Betts, Anthony, R.F.D. 1, Albion (6)
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 Bischoffberger, John M., Naples (3)
 Bishop, Lloyd W., 211 Vaughan St., Portland (3)
 Bisson, Napoleon, 86 Silver St., Waterville (6)
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 Blaisdell, Carl E., 47 Broadway, Bangor (10)
 Blaisdell, Elton R., 12 Deering St., Portland (3)
 Blaisdell, William B., Jr., 47 Broadway, Bangor (10)
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 Bousfield, Cyril E., Woolwich (8)
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 Bowne, Hays G., 9a Main St., Farmington (4)
 Boynton, Willard H., USOM/H&S Div., Box 32, Navy 150, c/o FPO, San Francisco, California (9)
 Bradbury, Francis W., 16 E. Main St., Dover-Foxcroft (11)
 Bradford, William H., 133 Coyle St., Portland (3)
 Bramhall, Theodore C., 185 Craigie St., Portland (3)
 Branch, Charles F., Central Maine General Hospital, Lewiston (1)
 Brann, Henry A., 31 Western Ave., Augusta (6)
 Branson, Sidney R., 37 Main St., South Windham (3)
 Breard, J. Alfred, 15 Summer St., Waterville (6)
 Brennan, Thomas V., 555 Main St., Presque Isle (2)
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 Brien, Maurice, 76 Pine St., Lewiston (1)
 Brinkman, Harry, 47 Perham St., Farmington (4)
 Broggi, Frank S., 18 Neal St., Portland (3)
 Broughton, David S., 18 Hartford St., Rumford (9)
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 Brown, Eugene E., 276 State St., Bangor (10)
 Brown, Lloyd, 316 State St., Bangor (10)
 Brown, Luther A., 13 Deering St., Portland (3)
 Brown, Stephen S., Mars Hill (2)
 Buker, Edson B., R. F. D. No. 2, Auburn (1)
 Bull, Frank B., 72 Church St., Gardiner (6)
 Bundy, Harvey C., Milo (11)
 Bunker, Willard H., York Harbor (15)
 Burnett, Claude A. Jr., 59 Deering St., Portland (3)
 Burke, John E., 268 State St., Bangor (10)
 Burke, Paul W., 5 High St., Newport (10)
 Burns, Robert M., 810 Main St., Westbrook (3)
 Burr, Charles G., 90 Court St., Houlton (2)
 Burrence, William C., 57 Deering St., Portland (3)
 Busch, John J., 105 Elm St., Mechanic Falls (1)
 Butler, Harry, 77 Broadway, Bangor (10)
 Butterfield, Wilfred L., 119 Main St., Lincoln (10)

C

Cameron, Dwight, Rockend Rd., Northeast Harbor (5)
 Campbell, Fred G., Box 484, Warren (7)
 Capron, Charles W., 22 Bramhall St., Portland (3)
 Carde, Albert M., 33 Elm St., Milo (11)
 Carmichael, Frank E., 72 Deering St., Portland (3)
 Caron, Frederic J., 174 Bates St., Lewiston (1)
 Carrier, John W., Central Maine General Hospital, Lewiston (1)
 Carter, Loren F., Northern Maine San., Presque Isle (2)
 Carton, Arthur K., Market Square, Houlton (2)
 Casey, William L., 131 State St., Portland (3)
 Caswell, John A., 16 Waldo Ave., Belfast (13)
 Cattley, Amy L., 477 Main St., Lewiston (1)
 Champlin, Frederic B., Ennion G. Williams Hospital, Medical College of Virginia, Richmond 19, Va. (6)
 Chapin, Milan A., 237 Turner St., Auburn (1)
 Charest, Leandre R., 314 Alfred St., Biddeford (15)
 Chatterjee, Manu, 11 McKen St., Brunswick (3)
 Chase, Philip B., 36 Main St., Farmington (4)
 Chason, Sidney, 173 Pine St., Bangor (10)
 Chasse, Richard L., 173 Main St., Waterville (6)
 Chenery, Frederick L., Monmouth (1)
 Christensen, Harry E., 92 Baxter Blvd., Portland (3)
 Clapp, Waldo A., 215 College St., Lewiston (1)
 Clapperton, Gilbert, 300 Main St., Lewiston (1)
 Clark, Frederick B., 131 State St., Portland (3)
 Clarke, Chester L., 10 Congress Square, Portland (3)
 Clarkin, Charles P., 64 Brookside Rd., Portland (3)
 Clement, James D., Jr., 77 Essex St., Bangor (10)

Clough, Dexter J., 2nd, 224 State St., Bangor (10)
 Clough, Herbert T., Jr., Lt. Col., M. C., USAF, 21st Tactical Hospital, APO 247, c/o P. M., New York, N. Y. (10)
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 Cobb, Stephen A., 34 Winter St., Sanford (15)
 Coffin, Ernest L., Northeast Harbor (5)
 Coffin, Silas A., 39 High St., Bar Harbor (5)
 Colby, Edward W., 389 Congress St., Portland (3)
 Cole, Donald P., 31 Deering St., Portland (3)
 Cole, John H., 22 Arsenal St., Portland (3)
 Colley, Maynard B., Main St., Wilton (4)
 Connell, Elizabeth B., Blue Hill Memorial Hospital, Blue Hill (5)
 Connell, John T., Parker Point Rd., Blue Hill (5)
 Cook, Aaron, 23 High St., Waterville (6)
 Cooper, Llewellyn W., 194 Main St., Bar Harbor (5)
 Cornell, Robert C., 78 State St., Bangor (10)
 Coulton, Donald, 326 State St., Bangor (10)
 Covert, Stanley B., Kingfield (4)
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 Cragin, Charles L., 831 Congress St., Portland (3)
 Craig, Allan, 41 E. 42nd St., New York 17, N. Y. (10)
 Crane, Lawrence, 255 Western Promenade, Portland (3)
 Crawford, Albert S., Box 414, Togus (6)
 Crawford, Joseph R., 105 Water St., Augusta (6)
 Crowe, James H., 121 Main St., Ellsworth (5)
 Cummings, George O., 47 Deering St., Portland (3)
 Cummings, George O., Jr., 47 Deering St., Portland (3)
 Cuneo, Kenneth J., 31 Summer St., Kennebunk (15)
 Cunningham, Allan R., R.F.D. 4, Belfast (13)
 Curran, Edward L., 209 State St., Bangor (10)
 Curtis, John B., 10 High St., Milo (11)
 Cutler, Lawrence M., 31 Grove St., Bangor (10)

D

Dachslager, Philip, 21 Western Ave., Augusta (6)
 Damon, Albert H., Limestone (2)
 Daniels, Donald H., 14 South St., Augusta (3)
 Darche, Albert A., 782 Main St., Westbrook (3)
 Darlington, Brinton T., Westwood Rd., Augusta (6)
 Dash, George E., Boothbay Harbor (8)
 Davidson, David, 49 Deering St., Portland (3)
 Davidson, Gisela K., 49 Deering St., Portland (3)
 Davies, Lloyd G., Fryeburg (3)
 Davis, Ansel S., Springvale (15)
 Davis, Earle M., 34 Gilman St., Waterville (6)
 Davis, Harry E., 169 State St., Portland (3)
 Davis, Wirt L., 91 Bartlett St., Lewiston (1)
 Day, DeForest S., Wiscasset (8)
 Defoe, Garfield G., Dixfield (9)
 Denison, John D., Main St., Patten (2)
 Dennett, Carl G., Saco (15)
 Dennis, Richard H., 33 College Ave., Waterville (6)
 Dennison, Frederick C., 52 Main St., Thomaston (7)
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 Desjardins, Arthur U., South Bristol (8)
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 Devan, Thomas A., 10245-47th Ave., Corona, L. I., N. Y. (10)
 DeWitt, James C., 282 South Main St., Brewer (10)
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 Donahue, Clement L., 13 Collins St., Caribou (2)
 Donahue, Gerald H., 4 Station St., Presque Isle (2)
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 Dore, Kenneth E., 133 Main St., Fryeburg (3)
 Dorogi, Louis V., 149 Main St., Freeport (3)
 Dorsey, F. Donald, 52 Deering St., Portland (3)
 Dougherty, John F., 112 Front St., Bath (8)
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 Dunham, Marguerite C., Northern Maine Sanatorium, Presque Isle (2)
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E

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F

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 Fortier, Paul J. B., 70 Pine St., Lewiston (1)
 Foster, Albert D., Bay Shore Drive, Falmouth Foreside (3)
 Foster, Thomas A., 131 State St., Portland (3)
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 French, Rowland B., 16 Water St., Eastport (14)
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 Frost, Robert A., 93 Summer St., Auburn (1)
 Fuller, Barbara L., 20 Chestnut St., Rockland (7)

G

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 Giberson, Raymond G., (Major), MC Dept. of Surgery, 2500th USAF Hospital, Mitchell Air Force Base, Long Island, N. Y. (2)
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 Goodrich, Blynn O., 165 Main St., Waterville (6)
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 Greene, Merrill S. F., 466 Main St., Lewiston (1)
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 Grow, William B., Central Maine Sanatorium, Fairfield (12)
 Guite, L. Armand, 45 Elm St., Waterville (6)

H

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 Haas, Rudolph, 488 Main St., Lewiston (1)
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 Hall, Walter L. H., 130 Middle St., Old Town (10)
 Hallett, George W., Jr., 131 State St., Portland (3)
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 Hannigan, Margaret H., 85 Goff St., Auburn (1)
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 Higgins, Everett C., 149 College St., Lewiston (1)
 Higgins, George I., 15 Water St., Newport (10)
 Higgins, Raymond D., Blue Hill (5)
 Hill, Allison K., 113 Somerset St., Bangor (10)
 Hill, Frederick T., 177 Main St., Waterville (6)
 Hill, Howard F., 33 College Ave., Waterville (6)
 Hill, Paul S., Jr., 323 Main St., Saco (15)
 Hinckley, Harris, 331 Cottage Rd., South Portland (3)
 Hirschberger, Celia, 44 Main St., Waterville (6)
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 Hochschild, Hugo, 33 Main St., Thomaston (7)
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 Holmes, George W., Waldo County General Hospital, Belfast (13)
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 Howard, Henry M., 105 Franklin St., Rumford (9)
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 Hubbard, Roswell E., Waterford (9)
 Hudson, Henry A., 11 Gage St., Bridgton (3)
 Huggard, Leslie H., Limestone (2)
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 Humphreys, Ernest D., 91 Main St., Pittsfield (12)
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 Johnson, Oscar R., 18 Deering St., Portland (3)
 Johnston, James S., York Harbor (15)
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Kadi, Francis J., Western Maine San., Greenwood Mt. (9)
 Kagan, Samuel H., 283 Water St., Augusta (6)
 Kay, Edwin, 31 Frye St., Lewiston (9)
 Kazutow, John, P. O. Box 24, Ellsworth (14)
 Kellogg, Robert O., 316 State St., Bangor (10)
 Kennedy, Roy H., Main St., Washburn (2)
 Kershner, Warren E., 57 Green St., Bath (8)
 Kibbe, Frank W., 22 White St., Rockland (7)
 Kiel, Joseph B., Columbia Falls (14)
 Kimball, Herrick C., P. O. Box 372, Fort Fairfield (2)
 Kinder, Edward L., Jr., 1027 Washington St., Bath (8)
 King, Merrill J., 22 White St., Rockland (7)
 King, Merrill J., Jr., 22 White St., Rockland (7)
 Kinghorn, Charles W., 206 Court St., Portsmouth, N. H. (15)
 Kirk, William V., Eagle Lake (2)
 Klutzow, Friedrich W., 152 Main St., Madison (12)
 Knickerbocker, Charles H., 15 High St., Bar Harbor (5)
 Knowlton, Charles C., Ellsworth (5)
 Knowlton, Henry C., (No address) (10)
 Konecki, John T., St. Mary's Hospital, Lewiston (1)
 Kopfmann, Harry, Deer Isle (5)
 Kramer, Henry F., 16 High St., Caribou (2)

L

Labbe, Onil B., Van Buren (2)
 LaFlamme, Paul J., 78 Pine St., Lewiston (1)
 LaFond, Robert S., 258 Main St., Saco (15)
 Laney, Richard P., 50 Water St., Skowhegan (12)
 Langer, Ella, State House, Augusta (6)
 Lape, C. Philip, 131 Chadwick St., Portland (3)
 Lapirow, Harry, 99 Main St., Kennebunk (15)
 Lappin, John J., 171 State St., Portland (3)
 Laroche, Joseph R., 42 Bacon St., Biddeford (15)
 Larrabee, Charles F., 48 Mt. Desert St., Bar Harbor (5)
 Larson, Karl V., East Machias (14)

Laughlin, K. Alexander, 201 State St., Portland (3)
 Lawry, Oram R., Jr., 96 Limerock St., Rockland (7)
 Leach, Charles H., Tenants Harbor (7)
 Leary, Gerald C., 144 State St., Portland (3)
 Leigh, Kenneth E., 163 Court St., Portsmouth, N. H. (15)
 Leighton, Adam P., 192 State St., Portland (3)
 Leighton, Wilbur F., 192 State St., Portland (3)
 Leiter, Laban W., 175 Vaughan St., Portland (3)
 Lemaitre, Paul G., 268 Webster St., Lewiston (1)
 Lenfest, Stanley R., Waldoboro (8)
 Lengyel, Charles, 26 South St., Biddeford (15)
 Lepore, Anthony E., 72 Church St., Gardiner (6)
 Lesieur, Louis C., 66 Beach St., Saco (15)
 Levesque, Romeo J., Frenchville (2)
 Lezberg, Joseph, 116 State St., Bangor (10)
 Libby, Harold E., 310 Main St., Westbrook (3)
 Lidstone, Frederick B., 117 Goff St., Auburn (1)
 Lieberman, Arthur N., 189 Broadway, Bangor (10)
 Lightbody, Charles H., No. Main St., Guilford (11)
 Lincoln, John R., 22 Bramhall St., Portland (3)
 Lincourt, Armand S., 47 Allen St., Sanford (15)
 Loewenstein, George, Dark Harbor (7)
 Logan, G. E. C., 131 State St., Portland (3)
 Lombard, Reginald T., 793 Main St., South Portland (3)
 Lord, Edwin M., 39 High St., Skowhegan (12)
 Lord, Maurice E., 220 Water St., Skowhegan (12)
 Lorimer, Robert V., 148 State St., Portland (3)
 Love, Robert B., 75 Main St., Gorham (3)
 Lovely, David K., 46 Deering St., Portland (3)
 Lubell, Moses F., Thayer Hospital, Waterville (6)
 Luther, William C., West Sullivan (5)
 Lynn, Geraldine, 188 Russell St., Lewiston (1)

M

MacBride, Robert G., 25 Washington St., Lubec (14)
 Macdonald, Donald F., 263 State St., Bangor (10)
 Macdonald, James H., 103 Main St., Kennebunk (15)
 MacDougall, Wilbur E., Dover-Foxcroft (11)
 MacDougall, James A., 303 Penobscot St., Rumford (9)
 Mack, Francis X., 144 State St., Portland (3)
 MacVane, William L., Jr., 211 State St., Portland (3)
 Madigan, John B., Houlton (2)
 Magaudda, Michael M. P., 39 Old Orchard St., Old Orchard Beach (15)
 Magosci, Alexander W., York (15)
 Mahaney, William F., 338 Main St., Saco (15)
 Maier, Paul, 723 Congress St., Portland (3)
 Maltby, George L., 31 Bramhall St., Portland (3)
 Mann, David V., 47 Chestnut St., Camden (7)
 Manter, Wilbur B., 1 Fern St., Bangor (10)
 Marquardt, Matthias, State Hospital, Augusta (6)
 Marshall, Donald F., 142 High St., Portland (3)
 Marshall, Joseph A., 177 Main St., Waterville (6)
 Marsters, David W., Strong (4)
 Marston, Henry E., North Anson (12)
 Marston, Paul C., Kezar Falls (3)
 Martin, Ralf, 58 Deering St., Portland (3)
 Martin, Thomas A., 203 State St., Portland (3)
 Mason, Luther S., 109 State St., Bangor (10)
 Mason, Peter H., Millinocket Community Hospital, Millinocket (10)
 Mathews, Hugh J., Jr., 345 Water St., Gardiner (6)
 Mazzacane, Walter D., Old Orchard (15)
 Melendy, Oakley A., 21 Western Ave., Augusta (6)
 Melnick, Jacob, 333 Congress St., Portland (3)
 Memmelaar, Joseph E., 54 Forest Ave., Bangor (10)
 Merrick, John R., 42 Sycamore Rd., Weymouth, Mass. (2)
 Merrill, Urban H., 13 Water St., Newport (10)
 Metcalf, John T., 2628 Marr St., N.W., Roanoke, Va. (14)
 Methot, Frank P., 256 Lisbon St., Lewiston (1)
 Michaud, Joseph C., 76 Main St., Waterville (6)
 Miller, Clark F., 46 Madison St., Auburn (1)
 Miller, George W., 16 Deering St., Norway (9)
 Miller, Hudson R., 11 Turner St., Auburn (1)
 Miller, Thor, 752 Main St., Westbrook (3)
 Milliken, Howard H., 105 Second St., Hallowell (6)
 Millington, Paul A., 44 Mountain St., Camden (7)
 Mills, Nathaniel, Harrison (9)
 Millstein, Hyman, Southwest Harbor (5)
 Miragliuolo, Leonard G., 10 Maple St., Bangor (10)

Mitchell, Hazen C., Calais (14)
 Mitchell, Roscoe L., 97 Water St., Hallowell (6)
 Mock, George F., Arthur R. Gould Memorial Hospital, Presque Isle (2)
 Monkhouse, William A., 131 State St., Portland (3)
 Moore, Arnold W., State Hospital, Augusta (6)
 Moore, Beryl M., Oxford (9)
 Moore, Roland B., 201 State St., Portland (3)
 Moore, Valentine J., Thayer Hospital, Waterville (6)
 Morin, Gerard L., 460 Main St., Lewiston (1)
 Morin, Harry F., 905 Middle St., Bath (8)
 Morissette, Russell A., 460 Main St., Lewiston (1)
 Morrell, Arch H., 67 Sewall St., Augusta (6)
 Morrison, Alvin A., 57 Deering St., Portland (3)
 Morrison, James B., Main St., Ashland (2)
 Morse, Edward K., 22 White St., Rockland (7)
 Moulton, Albert W., 180 State St., Portland (3)
 Moulton, Albert W., Jr., 180 State St., Portland (3)
 Moulton, Gardner N., 5 Grove St., Bangor (10)
 Moulton, John H., Rangeley (4)
 Moulton, Marion A. K., West Newfield (15)
 Munce, Richard T., 262 State St., Bangor (10)
 Mundie, Perley J., 111 Main St., Calais (14)
 Murphy, John J., 84 Portland St., South Berwick (15)
 Murphv, Norman B., 31 Western Ave., Augusta (6)
 Myer, John C., 2 School St., Sanford (15)

Mc

McAdams, William R., 723 Congress St., Portland (3)
 McCann, Eugene C., 49 Deering St., Portland (3)
 McCormack, Roland L., 12 Bridge St., Norway (9)
 McCoy, Thomas C., 17 College Ave., Waterville (6)
 McCrum, Philip H., 188 State St., Portland (3)
 McEvoy, Charles D., Jr., 316 State St., Bangor (10)
 McFarland, Edward A., 159 Maine St., Brunswick (3)
 McIntire, Barron F., Jr., 13 W. Elm St., Yarmouth (3)
 McKay, Roland L., P. O. Box 265, Augusta (6)
 McLaughlin, Clarence R., 345 Water St., Gardiner (6)
 McLaughlin, Ivan E., 345 Water St., Gardiner (6)
 McLean, E. Allan, 29 Deering St., Portland (3)
 McLellan, William A., 87 Chestnut St., Camden (7)
 McManamy, Eugene P., 209 State St., Portland (3)
 McMichael, Morton, 73 Deering St., Portland (3)
 McNamara, Wesley C., 8 Lee St., Lincoln (10)
 McNeil, Harry D., 81 Silver Rd., Bangor (10)
 McQuillan, Arthur H., 177 Main St., Waterville (6)
 McQuoid, Robert M., 39 Columbia St., Bangor (10)
 McWethy, Wilson H., 31 Western Ave., Augusta (6)

N

Nadeau, J. Paul, 91 Pine St., Lewiston (1)
 Nadeau, Lawrence A., 92 Pine St., Lewiston (1)
 Nangle, Thomas P., West Paris (9)
 Nelson, Chesley W., 121 Main St., Norway (9)
 Nelson, Isaac, 1925 Quentin Rd., Brooklyn 29, N. Y. (11)
 Nesin, Bourcard, 10 Water St., Howland (10)
 Newcomb, Charles H., Clinton (6)
 Nichols, Arthur A., Edgecomb (8)
 Nickerson, Norman H., Greenville (11)
 Noyes, H. Louella, 114 Congress St., Rumford (9)

O

O'Connor, Francis J., 4 Woodlawn St., Augusta (6)
 O'Crowley, Clarence R., South Bristol (8)
 O'Donnell, Eugene E., 32 Deering St., Portland (3)
 Oestrich, Alfred, 20 Congress St., Rumford (9)
 Ohler, Robert L., Veterans Administration, Togus (6)
 Olmsted, Burton L., 73 Deering St., Portland (3)
 O'Meara, Edward S., Eastern Memorial Hospital, Ellsworth (5)
 Orbeton, Everett A., 131 State St., Portland (3)
 Osborne, John R., Houlton (2)
 Osher, Harold L., 131 Chadwick St., Portland (3)
 Osler, Jay K., 74 Birch St., Bangor (10)
 O'Sullivan, William B., 331 Main St., Saco (15)
 Ottum, Alvin E., 150 State St., Portland (3)
 Ouellette, Marcel D., 114 Main St., Sanford (15)

P

Page, Rosario A., 18 Sweden St., Caribou (2)
 Palmer, Thomas H., Jr., 316 State St., Bangor (10)
 Parcher, George, 75 Main St., Ellsworth (5)
 Parker, James M., 18 Bramhall St., Portland (3)
 Parrot, Hadley, 74 Somerset St., Bangor (10)
 Patane, Joseph M., 256 Alfred St., Biddeford (15)
 Patterson, James, 1 Bay Rd., South Portland (3)
 Pawle, Robert H., Steep Falls (3)
 Pearson, Henry, Brownfield (9)
 Pearson, John J., 100 So. Main St., Old Town (10)
 Peaslee, C. Capen, Jr., 339 Woodford St., Portland (3)
 Penta, Walter E., 316 Woodford St., Portland (3)
 Perkins, Niles L., Jr., Oxford Paper Co., Rumford (9)
 Petterson, Herman C., Chebeague Island (3)
 Pfeiffer, Paul H., 16 Gilman St., Waterville (6)
 Philbrick, Maurice S., 292 Water St., Skowhegan (12)
 Pines, Philip, Maine St., Limestone (2)
 Platt, Anna, Rockport (7)
 Winter Address—110 Manatee Rd., Belleair, Clearwater, Fla.
 Plimpton, Jay R., 283 Water St., Augusta (6)
 Plummer, Albert W., Lisbon Falls (1)
 Pogue, Jackson S., 529 Gilmore Ave., Trafford, Pa. (3)
 Polisner, Saul R., 143 Vaughan St., Portland (3)
 Pomerleau, Ovid F., 177 Main St., Waterville (6)
 Pomerleau, Rodolphe J. F., 27 Main St., Waterville (6)
 Pooler, Harold A., State Hospital, Bangor (10)
 Porter, Edward C., 489 State St., Bangor (10)
 Porter, Joseph E., 22 Bramhall St., Portland (3)
 Poulin, Albert A., Sisters Hospital, Waterville (6)
 Poulin, James E., 177 Main St., Waterville (6)
 Poulin, J. Emile, 194 Lisbon St., Lewiston (1)
 Powell, Ralph C., Damariscotta (8)
 Pratt, George L., 7 Main St., Farmington (4)
 Pratt, Harold S., Livermore Falls (1)
 Pratt, Loring W., 177 Main St., Waterville (6)
 Price, Richard D., 8 Burns Ave., Caribou
 Priest, Maurice A., 108 South Stone St., Deland, Fla. (6)
 Pritham, Fred J., Greenville Junction (11)
 Proctor, Thomas E., Boothbay Harbor (8)
 Provost, Helen C., 48 Green St., Augusta (6)
 Provost, Pierre E., 48 Green St., Augusta (6)
 Purinton, Watson S., 15 Ohio St., Bangor (10)
 Purinton, William A., 15 Ohio St., Bangor (10)

R

Radebaugh, John F., Jr., 81 Parkview Ave., Bangor (10)
 Rand, Carleton H., 219 Oak St., Lewiston (1)
 Read, Seth H., 15 Church St., Belfast (13)
 Reed, Howard L., 68 Water St., Skowhegan (12)
 Reed, James W., 18 Main St., Farmington (4)
 Reel, John J., 59 So. Front St., Richmond (6)
 Reeves, Edward L., 179 Sabattus St., Lewiston (1)
 Reeves, Helene M., 179 Sabattus St., Lewiston (1)
 Renwick, Ward J., 102 Goff St., Auburn
 Winter Address—Colonial Hotel, St. Petersburg, Fla. (1)
 Reynolds, Arthur P., 420 Main St., Presque Isle (2)
 Reynolds, John F., 216 Main St., Waterville (6)
 Reynolds, Ralph L., 216 Main St., Waterville (6)
 Richards, Carl E., 34 Winter St., Sanford (15)
 Richards, Lee W., Jr., 21 Western Ave., Augusta (6)
 Richardson, C. Earle, 3 Cumberland St., Brunswick (3)
 Rideout, Samuel, 3 Green St., Fort Fairfield (2)
 Ridlon, Magnus F., 99 Broadway, Bangor (10)
 Risley, Edward H., 27 College Ave., Waterville (6)
 Robert, Roger J. P., 331 Main St., Saco (15)
 Robertson, George J., 33 College Ave., Waterville (6)
 Robinson, Carl M., Waite's Landing, R. 99, Portland (3)
 Ross, H. Danforth, 34 Winter St., Sanford (15)
 Ross, Maurice, 372 Main St., Saco (15)
 Roussin, William T., 48 Bacon St., Biddeford (15)
 Rowe, Daniel M., 169 Front St., South Portland (3)
 Rowe, Gunther H., 42 Main St., Livermore Falls (4)
 Rowe, Linwood M., 11 Franklin St., Rumford (9)
 Roy, Leopold O., 54 Pine St., Lewiston (1)
 Royal, Albert P., Jr., 82 Maine Ave., Rumford (9)
 Ruhlin, Carl W., 205 French St., Bangor (10)

Runyon, William N., 283 Water St., Augusta (6)
 Russell, Daniel F. D., Leeds (1)
 Russell, Robert F., Penobscot (5)

S

Sager, George F., 18 Bramhall St., Portland (3)
 Sampson, Arthur H., Damariscotta (8)
 Sanders, Stephen W., 120 Main St., Winthrop (6)
 Santoro, Domenico A., 43 Deering St., Portland (3)
 Sapiro, Howard M., 175 State St., Portland (3)
 Saunders, Allen I., State Hospital, Augusta (6)
 Savage, Richard L., 4 Elm St., Fort Kent (2)
 Schmidt, Lorrimer M., Veterans Administration, Togus (6)
 Schubert, Everett D., Federal St., Wiscasset (8)
 Schwartz, Carol, 35 Deering St., Portland (3)
 Scolten, Adrian H., 32 Deering St., Portland (3)
 Scribner, Herbert C., 259 Union St., Bangor (10)
 Sears, Harold G., Main St., Woodland (14)
 Selva, Irving L., Jr., 22 Bramhall St., Portland (3)
 Sewall, Elmer M., 14 Park St., Orono (10)
 Sewall, Kenneth W., 2 School St., Waterville (6)
 Shanahan, William H., 1231 Forest Ave., Portland (3)
 Shannon, Charles E. G., 9 Park St., Waterville (6)
 Shaper, Benjamin L., 73 Broadway, Bangor (10)
 Shapiro, Morrell, 29 Deering St., Portland (3)
 Shapleigh, Edward E., Kittery (15)
 Shelton, M. Tieche, 21 Western Ave., Augusta (6)
 Shems, Albert, 487 Main St., Lewiston (1)
 Shields, Daniel R., 369 Main St., Lewiston (1)
 Shields, Victor H., North Haven (7)
 Shippee, James N., 122 Main St., Winthrop (6)
 Shubert, Alice J., 317 State St., Bangor (10)
 Shubert, William M., 317 State St., Bangor (10)
 Shurman, Hans, 10 Spring St., Dexter (10)
 Sidwell-Thompson, Doris M., P. O. Box C, Pownal (3)
 Simpson, Margaret R., State House, Augusta (6)
 Skillin, Charles E., 690 Congress St., Portland (3)
 Skinner, Peter S., 112 Ohio St., Bangor (10)
 Sleeper, Francis H., State Hospital, Augusta (6)
 Small, Foster C., 169 High St., Belfast (13)
 Smith, Carroll H., Box 967, Presque Isle (2)
 Smith, Gerald R., Ogunquit (15)
 Smith, Henry F., Jackman Station (12)
 Smith, Hugh A., Eastern Maine General Hospital, Bangor (10)
 Smith, Jacob, 118 Front St., Bath (8)
 Smith, Joseph I., 118 Front St., Bath (8)
 Smith, Kenneth E., Veterans Administration, Togus (6)
 Smith, LeRoy H., Winterport (10)
 Smith, Margaret S., Box 967, Presque Isle (2)
 Somerville, Robert B., 473 Main St., Presque Isle (2)
 Somerville, Wallace B., Mars Hill (2)
 Sommerfeld, Kurt A., 5 Brunswick Ave., Gardiner (6)
 Sorensen, Joseph D., Central Maine Sanatorium, Fairfield (12)
 Soule, Gilmore W., 22 White St., Rockland (7)
 Southern, Edward M., 2 School St., Waterville (6)
 Sowles, Horace K., R. F. D. 1, Cumberland Center (3)
 Spear, William, 107 Main St., Lisbon Falls (1)
 Spellman, Francis A., Veterans Administration, Togus (6)
 Spencer, Jack, 31 Deering St., Portland (3)
 St. Pierre, Charles E., 51 Main St., Van Buren (2)
 Stanhope, Charles N., Dover-Foxcroft (11)
 Stanwood, Harold W., Buckfield (9)
 Stebbins, Arthur P., 131 State St., Portland (3)
 Steele, Charles W., 472 Main St., Lewiston (1)
 Stein, Ernest W., 72 Main St., Pittsfield (13)
 Stephenson, Richard B., 131 State St., Portland (3)
 Sterlin, Andre, 10 High St., Fort Kent (2)
 Stetson, Elbridge G. A., 17 Berry St., Brunswick (3)
 Stetson, Rufus E., Damariscotta (8)
 Stevens, Carl H., 18 Franklin St., Belfast (13)
 Stevens, Theodore M., 148 State St., Portland (3)
 Stewart, Delbert M., 15 Main St., South Paris (9)
 Stewart, Robert B., Maine Medical Center, Portland (3)
 Stickney, Laura B., 10 Cutts Ave., Saco (15)
 Stinchfield, Allan J., 16 E. Chestnut St., Augusta (6)
 Stinchfield, Walter S., Court St., Skowhegan (12)
 Stitham, Linus J., 50 Main St., Dover-Foxcroft (11)
 Storer, Daniel P., 12 Deering St., Portland (3)
 Stott, Ardenne A., 117 Front St., Bath (8)

Strout, Warren G., 205 French St., Bangor (10)
 Stuart, Ralph C., Guilford (11)
 Sturtevant, Vaughn R., 33 College Ave., Waterville (6)
 Sullivan, George E., R. F. D. 1, Fairfield (12)
 Sullivan, John R., 340 North Main St., Brewer (10)
 Suyana, Eji, 36 W. Main St., Ellsworth (5)
 Sweatt, Linwood A., 48 Drummond St., Auburn (1)
 Swett, Clyde L., 18 Sherman St., Island Falls (2)
 Sylvester, Stanley B., 1377 Washington Ave., Portland (3)
 Szendey, Andrew M., 26 Gray St., Madison (12)

T

Tabachnick, Henry M., 110 Park Ave., Portland (3)
 Tapley, Eugene D., 17 High St., Belfast (13)
 Tashiro, Sabro, U. S. Veterans Administration Hospital, Batavia, N. Y., (6)
 Taylor, Cornelius J., 16 State St., Bangor (10)
 Taylor, Herbert L., 25 Church St., Dexter (10)
 Taylor, Paul E., 9 Wentworth St., Kittery (15)
 Taylor, William F., Providence Ave., Falmouth Foreside, R. 99, Portland (3)
 Tchao, Jou S., 82 Pine St., Lewiston (1)
 Temple, George L., 18 Franklin St., Belfast (13)
 Tetreau, William J., 131 Chadwick St., Portland (3)
 Thacher, Henry C., 11 Turner St., Auburn (1)
 Thaxter, Langdon T., 31 Deering St., Portland (3)
 Thegen, W. Edward, Elm St., Bucksport (5)
 Theriault, Louis L., 197 Center St., Old Town (10)
 Thomas, Philip B., 205 French St., Bangor (10)
 Thompson, Cecil F., Dodge Rd., Phillips (4)
 Thompson, John B., 9 Central St., Bangor (10)
 Thompson, Philip P., Jr., 704 Congress St., Portland (3)
 Tibbetts, Otis B., 33 Court St., Auburn (1)
 Tibbetts, Raymond R., Bethel (9)
 Timberlake, Ralph M., Jr., Central Maine General Hospital, Lewiston (1)
 Titherington, John B., 209 State St., Portland (3)
 Todd, Albert C., 410 South Main St., Brewer (10)
 Torrey, Marcus A., 75 State St., Ellsworth (5)
 Torrey, Raymond L., Main St., Searsport (13)
 Tougas, Raymond A., 8 Cumberland St., Brunswick (3)
 Tounge, Harry G., Jr., 12 Union St., Camden (7)
 Tousignant, Camille, 111 Pine St., Lewiston (1)
 Toussaint, Leonid G., P. O. Box 9, Fort Kent (2)
 Towne, Charles E., 18 Common St., Waterville (6)
 Tracy, Mary J., Damariscotta (8)
 Trowbridge, Mason, Jr., 142 Pine St., Bangor (5)
 Turner, Harland G., R. F. D. 2, Norridgewock (12)
 Turner, Oliver W., 42-71 78th St., Elmhurst 73, N. Y. (6)
 Twaddle, Gard W., 57 Goff St., Auburn (1)
 Tze, Channam, MC 98 General Hospital, APO No. 34, c/o P. M. New York, N. Y. (1)

V

Vachon, Robert D., 34 Winter St., Sanford (15)
 Valentine, John B., 104½ Sewall St., Augusta (6)
 Van Duyn, John, 205 French St., Bangor (10)
 Ventimiglia, William A., 131 State St., Portland (3)
 Vickers, Martyn A., 268 State St., Bangor (10)
 Viger, Leopold A., 176 Elm St., Biddeford (15)
 Viles, Wallace E., Turner (1)
 Vogell, Frederick C., 18 Sweden St., Caribou (2)

W

Wadsworth, Richard C., 489 State St., Bangor (10)

Wagner, Samuel L., Winterport (10)
 Wakefield, Robert D., Central Maine General Hospital, Lewiston (1)
 Walker, George R., Main St., East Corinth (10)
 Ward, John V., 131 State St., Portland (3)
 Warren, H. Draper, 18 Sweden St., Caribou (2)
 Wasgatt, Wesley N., 41 Talbot Ave., Rockland (7)
 Waterman, Dorothy, Waldoboro (7)
 Waterman, Richard, Waldoboro (7)
 Weatherbee, George B., Hampden Highlands (10)
 Weaver, Michael L., 32 Federal St., Brunswick (3)
 Webber, Isaac M., 29 Deering St., Portland (3)
 Webber, John R., Main St., Houlton (2)
 Webber, M. Carroll, 735 Stevens Ave., Portland (3)
 Webber, Samuel R., Calais (14)
 Webber, Wallace E., 297 Main St., Lewiston (1)
 Webber, Wedgwood P., 376 Main St., Lewiston (1)
 Webster, Fred P., 101 Vaughan St., Portland (3)
 Weed, Laura B., Eastern Maine General Hospital, Bangor (10)
 Weed, Lawrence L., Eastern Maine General Hospital, Bangor (10)
 Weeks, DeForest, 158 Pleasant Ave., Portland (3)
 Weisz, Hans, 196 Main St., Lincoln (10)
 Wellington, J. Foster, 655 Congress St., Portland (3)
 Wescott, Clement P., Windham Hill (3)
 Westernmeyer, Marion W., 858 Washington St., Bath (8)
 Weymouth, Currier C., 83 Main St., Farmington (4)
 Weymouth, Frank D., 46 North Main St., Brewer (10)
 Weymouth, Raymond E., 194 Main St., Bar Harbor (5)
 White, Leland M., 11 Riverview Ave., Caribou (2)
 White, Verdeil O., North Jay (4)
 White, William J., 1 Mitchell Rd., South Portland (3)
 Whitney, Byron V., St. Francis Hospital, Hartford, Conn. (10)
 Whitney, Ray L., Cape Porpoise (15)
 Whittier, Alice A. S., 143 Neal St., Portland (3)
 Whitworth, John E., 116 Hammond St., Bangor (10)
 Wight, Donald G., 30 Mitchell Rd., South Portland (3)
 Wilbur, Herbert T., Jr., Southwest Harbor (5)
 Williams, Charles J., 93 Main St., Livermore Falls (1)
 Williams, Edmund P., Oakland (6)
 Williams, James A., 40 Pleasant St., Mechanic Falls (1)
 Williams, Ralph E., Main St., Freeport (3)
 Wilson, C. Ivan, 40 Court St., Houlton (2)
 Wilson, Harry M., 944 Middle St., Bath (8)
 Wilson, Robert W., Veterans Administration, Togus (6)
 Winchenbach, Francis A., 910 Washington St., Bath (8)
 Wolfahrt, Eugene P., 338 Main St., Saco (15)
 Wood, George W., III, 156 North Main St., Brewer (10)
 Woodcock, Allan, 35 Second St., Bangor (10)
 Woodcock, John A., 35 Second St., Bangor (10)
 Woodman, Arthur B., Falmouth Foreside (3)
 Worthing, Verla E., P. O. Box A, Thomaston (7)
 Wright, LaForest J., Corinna (10)

Y

Young, Ernest T., P. O. Box 239, Millinocket (10)
 Young, George E., 159 Water St., Skowhegan (12)
 Young, John, Jonesport (14)
 Young, William J., 210 Lake St., Auburn (1)

Z

Zanca, Ralph A., 86 Pine St., Lewiston (1)
 Zikel, Herbert M., High St., Wilton (4)
 Zolov, Benjamin, 296 Congress St., Portland (3)

Woman's Auxiliary to the Maine Medical Association

ANDROSCOGGIN COUNTY

Andrews, Mrs. S. L. 35 White St., Lewiston
 Beaudet, Mrs. Simon C. 25 Webster St., Lewiston
 Beeaker, Mrs. Vincent H. 85 Wood St., Lewiston
 Beliveau, Mrs. Bertrand A. 56 Howe St., Lewiston
 Beliveau, Mrs. Romeo A. 89 Pine St., Lewiston
 Bernard, Mrs. Romeo A. 26 Beacon St., Lewiston
 Branch, Mrs. Charles F. 69 Gamage Ave., Auburn
 Chapin, Mrs. Milan A. 237 Turner St., Auburn
 Chevalier, Mrs. Paul R. 353 Pine St., Lewiston
 Clapp, Mrs. Waldo A. 215 College St., Lewiston
 Clapperton, Mrs. Gilbert 21 Ryder St., Lewiston
 Cox, Mrs. William V. 82 Gamage Ave., Auburn
 Davis, Mrs. Wirt L. 14 Nelke Place, Lewiston
 Fahey, Mrs. William J. 17 Frye St., Lewiston
 Fishman, Mrs. Louis N. 223 Lake St., Auburn
 Flanders, Mrs. Merton N. 370 Main St., Lewiston
 Fortier, Mr. Paul 70 Pine St., Lewiston
 Frost, Mrs. Robert A. 108 Summer St., Auburn
 Gauvreau, Mrs. Horace L. 69 Horton St., Lewiston
 Giguere, Mrs. Eustache 98 Webster St., Lewiston
 Goodwin, Mrs. Ralph A., Sr. 56 Denison St., Auburn
 Goodwin, Mrs. Ralph A., Jr. 48 Grandview Ave., Auburn
 Green, Mrs. Ross 95 Whitney St., Auburn
 Greene, Mrs. John P. West Auburn St., Auburn
 Greene, Mrs. Merrill S. F. 466 Main St., Lewiston
 Gross, Mrs. Leroy C. 19 Goff St., Auburn
 Haas, Mrs. Rudolph 484 Main St., Lewiston
 Higgins, Mrs. Everett C. 147 College St., Lewiston
 Hirshler, Mrs. Max 25 Bardwell St., Lewiston
 Horsman, Mrs. Donald 50 Goff St., Auburn
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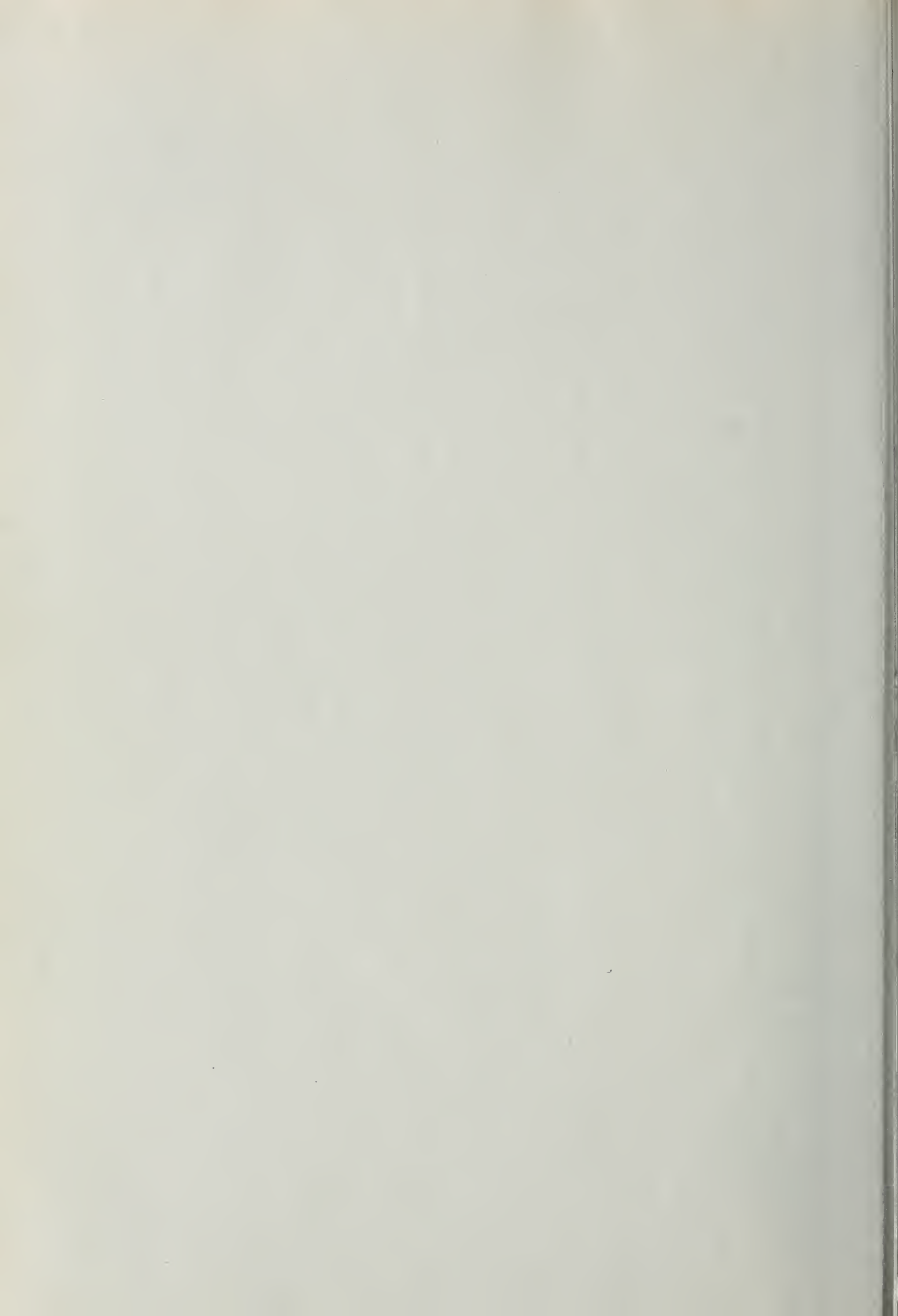
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